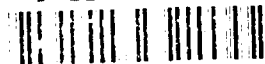


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WING DAM IMPROVEMENTS AT JOHNSON ISLAND

POOL 18, MISSISSIPPI RIVER

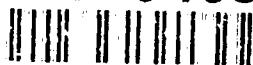
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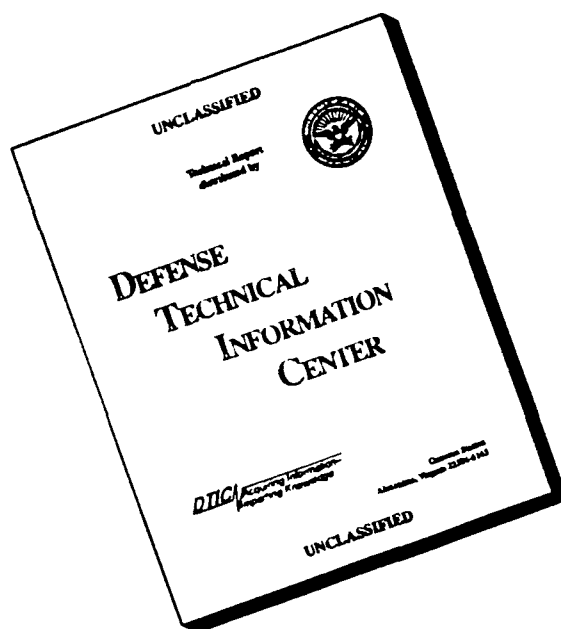
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ENVIRONMENTAL ASSESSMENT

WING DAM IMPROVEMENTS AT JOHNSON ISLAND

POOL 18, MISSISSIPPI RIVER
DES MOINES COUNTY, IOWA

JULY 1992

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ENVIRONMENTAL ASSESSMENT
WING DAM IMPROVEMENTS AT JOHNSON ISLAND
POOL 18, MISSISSIPPI RIVER
DES MOINES COUNTY, IOWA

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Finding of No Significant Impact

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ENVIRONMENTAL ASSESSMENT
WING DAM IMPROVEMENTS AT JOHNSON ISLAND

DES MOINES COUNTY, IOWA
POOL 18, MISSISSIPPI RIVER

I. PURPOSE AND NEED FOR ACTION

The purpose of this Environmental Assessment (EA) is to address the effects of new construction proposed as part of navigation channel maintenance. Navigation channel maintenance includes periodic repair of existing training works or regulating structures, e.g., wing dams and closing dams, as well as modification of these structures. These actions generally involve large-grade limestone rock placement.

Modification may include the raising, lowering, or notching of these structures to optimize their performance in flow control and sediment transport. Also, navigation dams and appurtenant structures require periodic rock placement for repair or improvement of bank protection.

This document specifically addresses rock placement at seven sites. All seven sites are in Pool 18, River Miles (RMs) 420.2 to 421.6, Mississippi River, Des Moines, County, Iowa. All of the structures are existing wing dams (plate 1).

These structures direct flow away from the shoreline and into the main navigation channel. Basically, these structures constrict the river flows into a more narrow cross section. This reduced cross section causes the water velocity to increase and subsequently to transport more sediment. As a result, the need for channel maintenance, i.e., dredging and dredged material placement, should be reduced in this area.

Alternatives to the proposed actions are limited. They include the no Federal action alternative or other configurations and quantities of rock.

The project is expected to help maintain the navigation channel, with no significant impacts to natural, cultural, economic, or social resources. For this reason, an Environmental Impact Statement (EIS) will not be prepared for this action. Because the proposed action is subject to the provisions of the Clean Water Act, a Section 404(b)(1) Evaluation has been prepared for the project (appendix B). Section 401 compliance has been sought through coordination with the State of Iowa. A Public Notice has been prepared and distributed concurrently with this document. Copies of correspondence relative to this action are included in Appendix A - Pertinent Correspondence.

II. PROJECT DESCRIPTION

The proposed work addressed in this document involves improving seven wing dams from RM 420.2 to RM 421.6. Each proposed action is described as follows:

A. Wing Dam No. 2. This structure is located at RM 420.3 (plate 2). Its elevation will be raised from 522.7 to 525.0, approximately 3 feet below flat pool. The length of the wing dam will be brought back to original design of 1,400 feet.

Wing Dam No. 2 will have a total of 200 feet of bankline protection added upstream and downstream along the bank.

B. Wing Dam No. 24. This structure is located at RM 420.4 (plate 3). Its elevation will be raised from 522.7 to 525.0, approximately 3 feet below flat pool. Its length will remain at 950 feet. A total of 200 feet of bankline protection will be placed.

C. Wing Dam No. 23. This structure is located at RM 420.6 (plate 4). Its elevation will be raised from 522.8 to 525.0, approximately 3 feet below flat pool. Its length will remain at 600 feet. A total of 200 feet of bankline protection will be placed.

D. Wing Dam No. 22. This structure is located at RM 420.9 (plate 5). Its elevation is to be raised from 523.0 to 525.0, approximately 3 feet below flat pool. Its length will remain at 600 feet. A total of 200 feet of bankline protection will be placed.

E. Wing Dam No. 19. This structure is located at RM 421.5 (plate 6). Its elevation is to be raised from 523.3 to 525.0, approximately 3 feet below flat pool. Its length will remain at 450 feet. A total of 200 feet of bankline protection will be placed.

F. Wing Dam No. 20. This structure is located at RM 421.3 (plate 7). Its elevation is to be raised from 523.2 to 525.0, approximately 3 feet below flat pool. Its length will remain at 450 feet. A total of 200 feet of bankline protection will be placed.

G. Wing Dam No. 21. This structure is located at RM 421.5 (plate 6). Its elevation is to be raised from 523.1 to 525.0, approximately 3 feet below flat pool. Its length will remain at 450 feet. A total of 200 feet of bankline protection will be placed.

III. ALTERNATIVES

Alternatives to the proposed action include:

A. No Federal Action. No action on the part of the Corps of Engineers means that no new construction will occur (i.e., elevation and length expansion on existing structures). Without the new construction, annual dredging would still be required since repair of existing structures to original design would most likely be insufficient to reduce dredging frequency.

B. Construction of Training Works in Other Locations or Configurations. This alternative was not selected based on hydraulic design necessary to capture and maintain flow in the main channel of the Mississippi River at the proposed project location.

C. Improve the Seven Wing Dams and Install Bankline Protection in the Project Location. This is the preferred alternative and is described in detail in Section II, PROJECT DESCRIPTION.

IV. AFFECTED ENVIRONMENT

Prior to construction of Lock and Dam 18, the proposed area was comprised of islands, creating side and main channel habitats. After inundation of Pool 18, the high points of the islands remained, reducing island size and terrestrial habitat and increasing aquatic habitat.

Vegetation on the islands is primarily floodplain forest comprised of species such as silver maple (*Acer saccharinum*), cottonwood (*Populus deltoides*), willow (*Salix* sp.), box elder (*Acer negundo*), and mulberry (*Morus* sp.).

Wildlife species typically using the area include small mammals, rodents, and deer. The combination of wooded island and adjacent slough provides habitat for reptiles and amphibians. The mature forest also provides habitat for the common flicker and other woodpecker and bird species, as well as nesting cavities for owls and wood ducks.

It is unlikely that there is endangered species use in the project area. The bald eagle (*Haliaeetus leucocephalus*) is a winter resident of Des Moines County and may use the large trees on the shoreline of the island as perches. The Higgins' eye pearly mussel (*Lampsilis higginsii*) and the fat pocketbook pearly mussel (*Potamilis capex*) have been found in Pool 18; however, it is unlikely that they inhabit the project area. Local mussel surveys have not identified any endangered species in the nearby area.

Birds such as ducks and wading birds utilize the backwater areas for feeding, brooding, and loafing sites.

The aquatic community found near the existing structures would typically be diverse, owing to the range of available habitat types within a small area. In a study by the Iowa Conservation Commission (now the Iowa Department of Natural Resources) researchers found that certain wing dams are attractants to fish (Pitlo, 1981). Fish preferred wing dams on outside bends that had less than 5 feet of water flowing over the top of the structure. Wing and closing dam habitat is an important component of the habitats available to the Upper Mississippi River fish community. Study results showed these structures provide aquatic habitat diversity, shelter, produce fish food organisms, and may provide spawning substrate for a variety of fish species.

Mussel presence in the area is limited. Cawley (1981) identified several mussel collections between RM 417.5 and RM 420 along the Iowa shoreline. The proposed action should not impact nearby mussels.

An archeological survey was conducted for this project. This survey verified previous documentation of deep deposits of post-settlement alluvium. The State Historical Society of Iowa's letter of May 8, 1992, (appendix A) concurred with the Corps' finding that no historic properties will be affected by the proposed undertaking.

V. ENVIRONMENTAL EFFECTS

Environmental effects are summarized in table EA-1.

The long-term effect of the project is expected to be beneficial to man-made resources in the area with no significant adverse effect on natural resources.

Wildlife species which may currently utilize the project area will not be significantly affected by the action. The placement of riprap below the normal water level and extension of bank protection below the dam is expected to benefit aquatic resources by increasing substrate diversity and reducing bank caving.

Rock bank protection is not expected to affect terrestrial species currently using the project area.

Increase of navigation channel flow is intended to improve sediment transport and scour of sand accretions in the main channel. Because of the relative instability of the sand substrate in this reach, little colonization or development of a diverse benthic community would be expected. Therefore, reversal of accretion in this reach is not expected to be detrimental to the aquatic community.

Federally listed threatened and endangered species were considered for this project. Threatened or endangered species which potentially may be

TABLE EA-1

Effects of the Proposed Action on
Natural and Cultural Resources

<u>Types of Resources</u>	<u>Authorities</u>	<u>Evaluation of Effects</u>
Air Quality	Clean Air Act, as amended (42 U.S.C. 1857h-7, et seq.)	No permanent or long-term adverse effects. Will be in compliance with applicable air quality regulations.
Areas of Particular Concern Within the Coastal Zone	Coastal Zone Management Act in 1972, as amended (16 U.S.C. 145,1 et seq.)	Not present in planning area.
Endangered and Threatened Species Critical Habitat	Endangered Species Act of 1973, as amended (16 U.S.C. 1531, et seq.)	No threat to the presence or continued existence of any federally listed endangered or threatened species is anticipated.
Floodplains	Executive Order 11988, Flood Plain Management	Existing development will receive additional protection. Since the study area already has flood protection, the project's influence on future development is expected to be limited.
Historic and Cultural Properties	National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.)	No significant impacts anticipated.
Prime and Unique Farmland	CEQ Memorandum of August 1980; Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act. Farmland Protection Policy Act.	No effect.
Water Quality	Clean Water Act of 1977, as amended (33 U.S.C. 1251, et seq.)	No waters of the U.S. affected.
Wetlands	Executive Order 11990, Protection of Wetlands, May 24, 1977	No wetlands will be affected.
Wild and Scenic Rivers	Wild and Scenic Rivers Act, as amended (16 U.S.C. 1271, et seq.)	Not present in planning area.

affected by actions of this type are the bald eagle, Higgins' eye pearly mussel, and the fat pocketbook pearly mussel.

Bald eagles utilize large trees along the shoreline throughout the area as resting and feeding perches. Over the long term, bank stabilization should prevent the loss of shoreline trees. No such trees would need to be removed for construction of the proposed project. Project construction will take place during the late summer and fall months; therefore, no significant impacts to the wintering bald eagle population are anticipated to result from project activities.

Impacts to State threatened or endangered species are also anticipated to be minimal to nonexistent. A letter from the Iowa Department of Natural Resources, dated May 12, 1992, confirms this (appendix A).

Minor, temporary increases to noise levels and air quality due to construction activity may occur as a result of construction and transportation of materials. This may have temporary adverse effects on users of nearby recreational sites. No long-term significant impacts are anticipated, and no air quality standards should be violated.

Minor, temporary increases in turbidity and levels of suspended sediments would occur during construction activity. No long-term adverse effects to water quality are anticipated. A Section 404(b)(1) Evaluation has been prepared (appendix B). Section 401 certification has been requested from the State of Iowa and will be obtained prior to construction.

An archeological survey was conducted for this project. This survey verified previous documentation of deep deposits of post-settlement alluvium. The State Historical Society of Iowa's May 8, 1992, letter (appendix A) concurred with the Corps' finding that no historic properties will be affected by the proposed undertaking.

Construction of bank protection and closing dam is expected to have little effect on aesthetic values. No displacement of people or farms will occur, and no change in community cohesion is anticipated. No significant impacts to community and regional growth, property values and tax revenues, or employment and labor force are expected to result from this action. Business and industrial development may be considered to benefit from maintenance of the navigation channel and training works in this section of the river. No significant impacts to life, health, and safety are anticipated. Public recreational facilities and services will benefit from a small increase in fishing activity. The project will help maintain the 9-foot channel for commercial and recreational boating.

Considered in conjunction with future proposed work in the project area, cumulative effects of the project include bank stabilization, reduced dredging, and slight recreational enhancement.

With no Federal action, no adverse effects would occur from construction, bank caving and sediment input would continue, and no long-term benefits

to recreation would be expected. Alternative locations for bank protection, wing dam repair, and closing dam construction would be anticipated to have impacts similar to the preferred alternative, but would not serve the immediate need for training work maintenance and bank protection.

VI. RELATIONSHIP TO ENVIRONMENTAL REQUIREMENTS

The project will comply with Federal environmental laws, Executive orders and policies, and State and local policies including the following:

- Clean Air Act, as amended
- Clean Water Act, as amended
- Endangered Species Act of 1973, as amended
- Federal Water Project Recreation Act
- Fish and Wildlife Coordination Act of 1958, as amended
- Land and Water Conservation Fund Act of 1966, as amended
- National Environmental Policy Act of 1969, as amended
- National Historic Preservation Act of 1966, as amended

The project is located on federally owned land and will not result in the conversion of farmland or existing land-use plans. This segment of the Upper Mississippi River is not a federally recognized wild or scenic river. The project will not result in any significant change in floodplain storage, and no significant loss of wetlands will occur from project implementation. Therefore, this action will not conflict with the provisions of the following:

- Farmland Protection Policy Act of 1981
- Executive Order 11988, Floodplain Management
- Executive Order 11990, Protection of Wetlands
- Wild and Scenic Rivers Act of 1968

VII. COORDINATION

Coordination has been made throughout the planning and design process with the following State and Federal agencies:

- U.S. Fish and Wildlife Service
- U.S. Coast Guard
- U.S. Environmental Protection Agency
- Iowa Department of Natural Resources
- Iowa State Historic Preservation Officer

Wing dam improvement, bank stabilization, and improvement of navigation training works are coordinated through an interagency team called the Committee to Assess Regulatory Structures (CARS). CARS consists of interdisciplinary personnel from the Corps of Engineers and the U.S. Fish and

Wildlife Service. The U.S. Fish and Wildlife Service ensures the input of appropriate State natural resource staff to the planning process. CARS activities also are discussed in other forums such as the Fish and Wildlife Interagency Committee (FWIC) and River Resources Coordinating Team (RRCT).

Appendix A - Pertinent Correspondence contains letters of comment thus far regarding this action.

The U.S. Environmental Protection Agency (U.S. EPA) stated several concerns in their April 9, 1992, letter:

- All materials will be commercially procured and will be clean and noncontaminating.

- Turbidity and resuspension of contaminants should remain low for several reasons. The Corps of Engineers is purchasing clean fill. The season of placement will be later this summer and early fall. At this time of the year, both the river stage and the amount of material in the water column are usually low. The existing material is primarily sand which has limited contaminant bonding capacity. Any substrate that will be disturbed should be low in contaminants and will settle out very quickly.

- Erosion will be kept to a minimum during and after construction by avoiding major ground disturbance. This site is highly erodible by the nature of the soil; however, bankline stabilization will protect any further erosion as a result of flooding. If any erosion does occur during the construction, this will be offset by future erosion control by implementation of the project. The site will be revegetated once the project is complete.

- Breeding and migration seasons are being avoided to reduce any potential impact to the fish and wildlife resources.

REFERENCES

CAWLEY, E. T. 1981. Report on Mussel Survey of Pools 17, 18, 19, Upper Mississippi River. Prepared for Iowa Conservation Commission. Loras College, Dubuque, Iowa.

PITLO, JOHN, Jr. 1981. Commercial Fisheries Investigations, Project Completion Report. Project No. 2-350-R: Wing Dam Investigations. Iowa Conservation Commission.

FINDING OF NO SIGNIFICANT IMPACT
WING DAM IMPROVEMENTS AT JOHNSON ISLAND

POOL 18, MISSISSIPPI RIVER
DES MOINES COUNTY, IOWA

I have reviewed the information provided by this Environmental Assessment, along with data obtained from cooperating Federal, State, and local agencies and from the interested public. Based on this review, I find that improvement of the seven wing dams and bankline protection will not significantly affect the quality of the environment. Therefore, it is my determination that an Environmental Impact Statement (EIS) is not required. This determination will be reevaluated if warranted by later developments.

Alternatives considered along with the preferred action were:

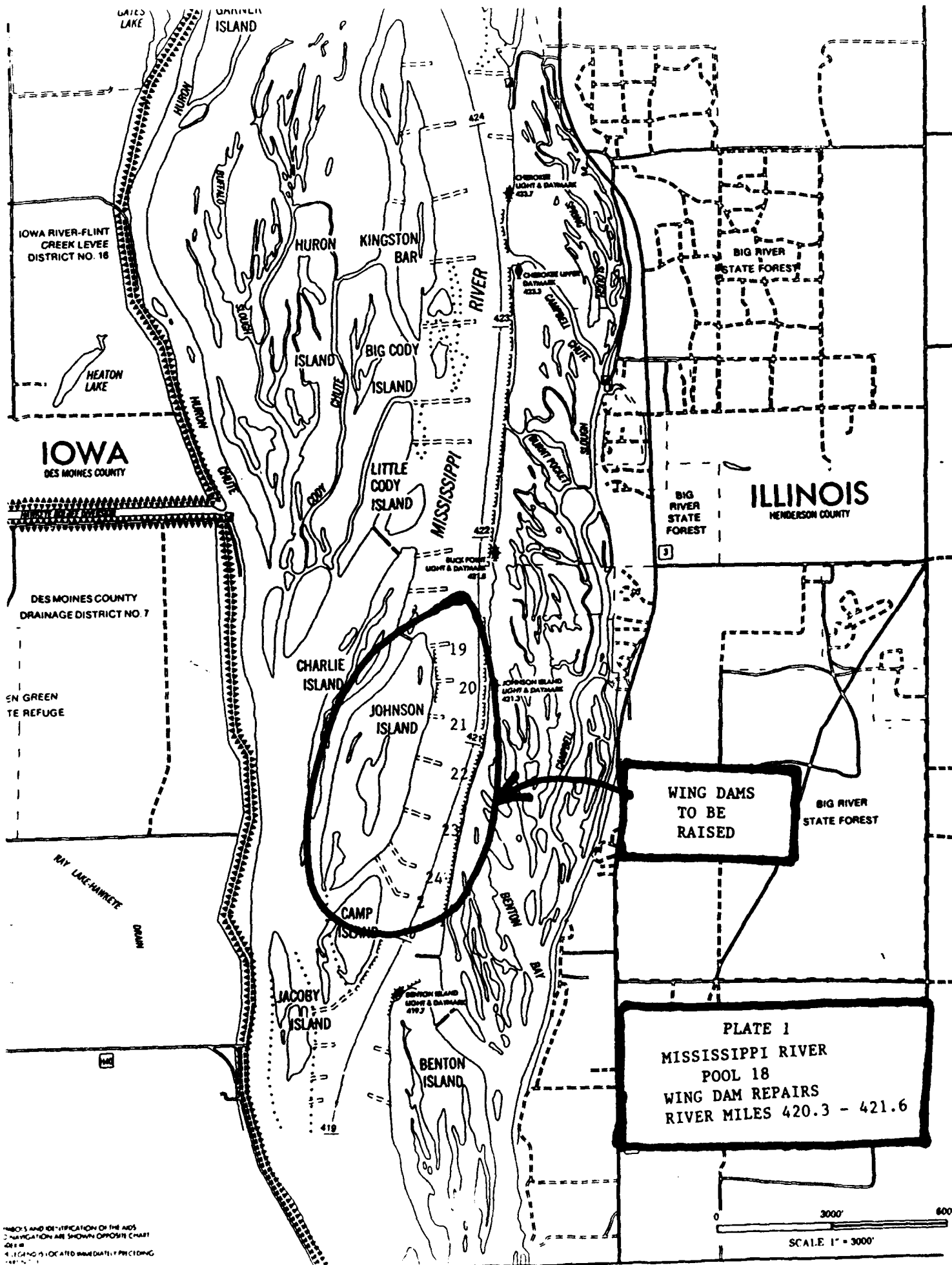
- No Federal action
- Construction of training works in other locations or configurations

Factors considered in making a determination that an EIS was not required are as follows:

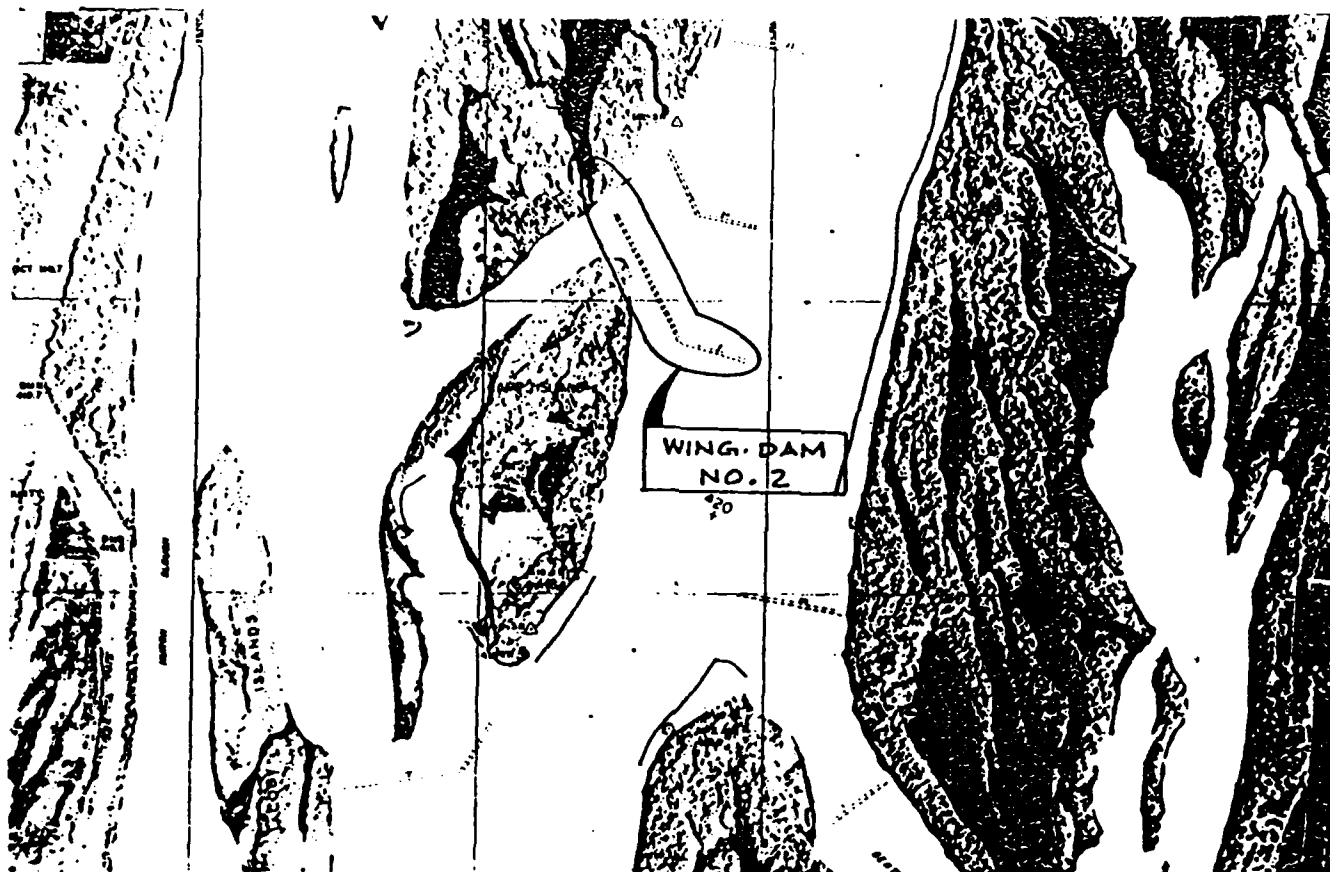
- a. The action is expected to reduce the need for channel maintenance dredging and placement activities in this section of the river.
- b. Initial loss of and disturbance to aquatic habitat during construction will be offset by increased habitat diversity following project completion.
- c. No significant social, economic, environmental, or cultural impacts are anticipated as a result of this action.

(Date)

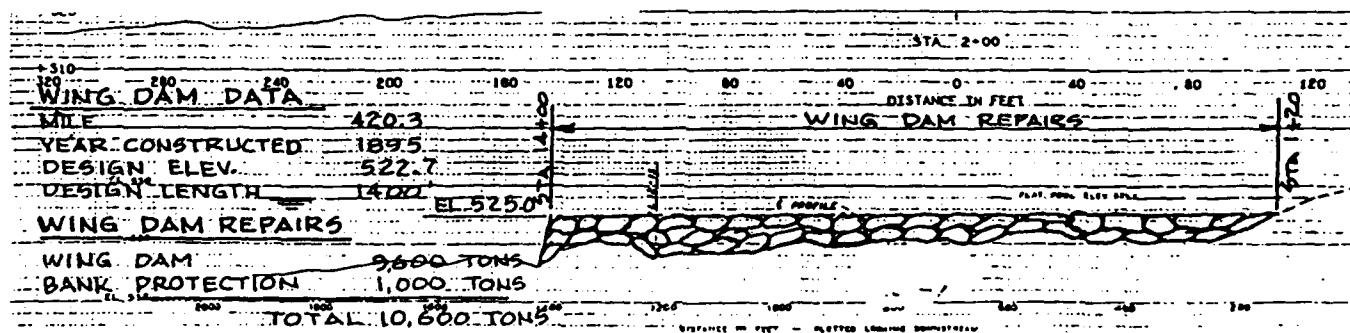
Albert J. Kraus
Colonel, U.S. Army
District Engineer



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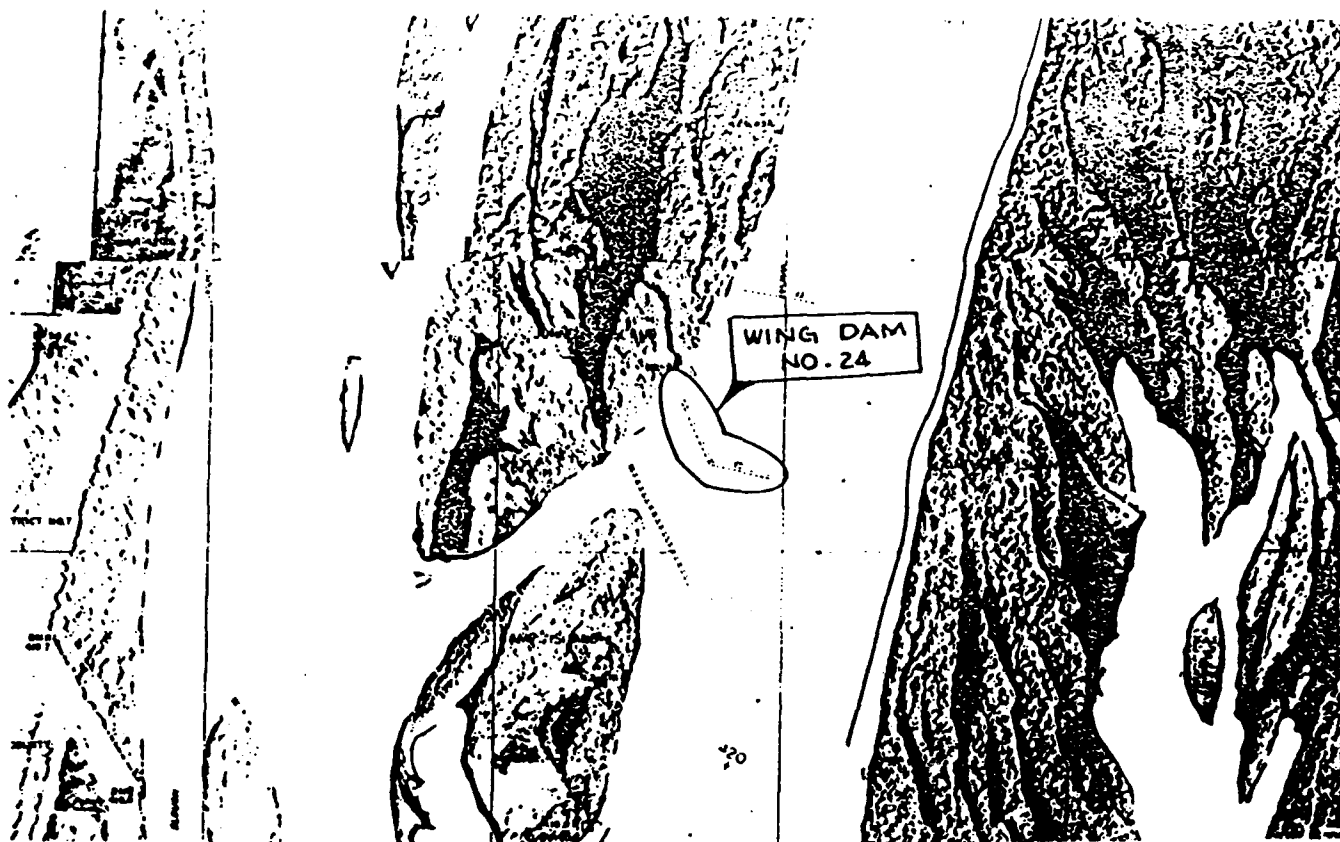
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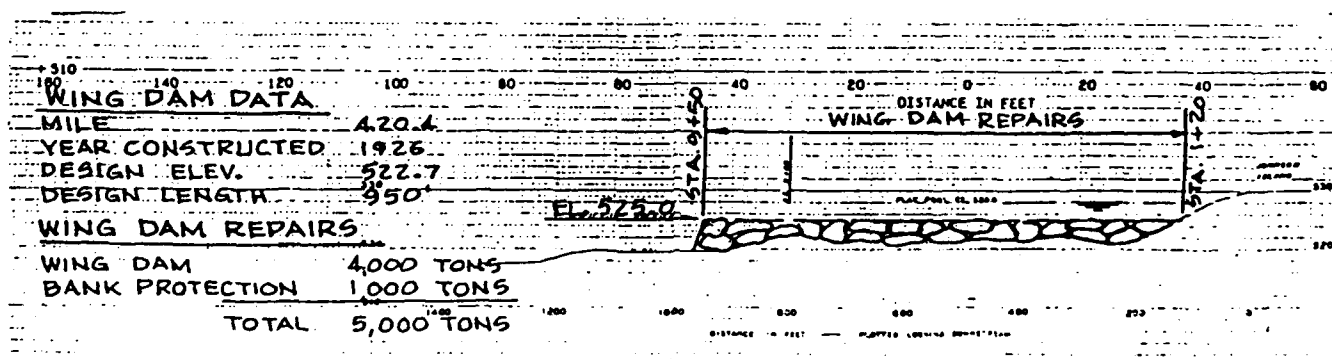
PROFILE

WING DAM NO. 2

MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 2
MILE 420.3



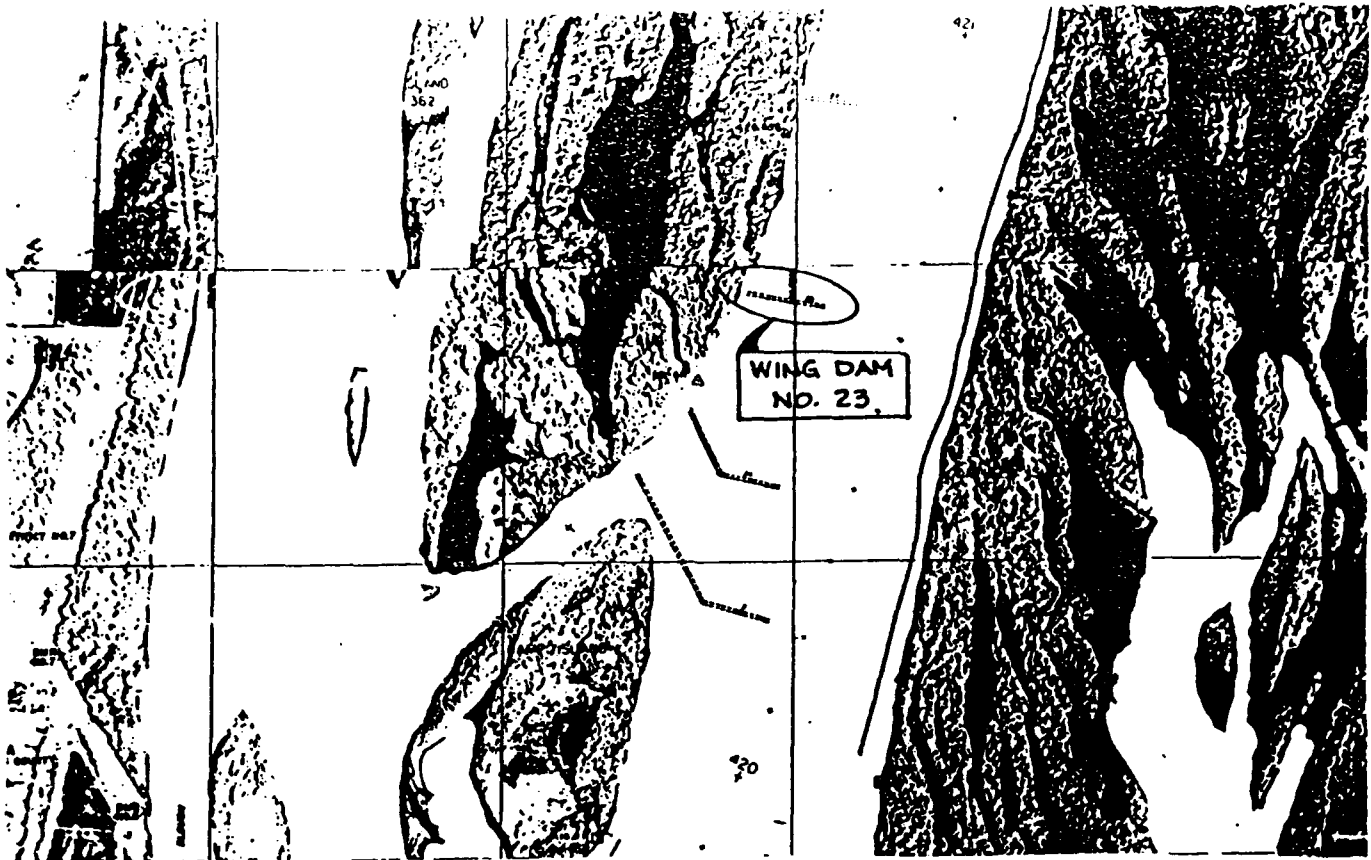
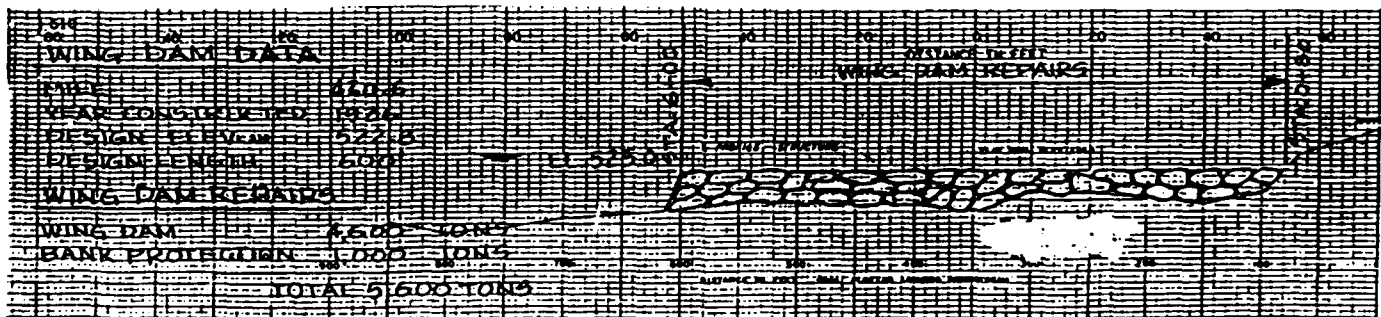
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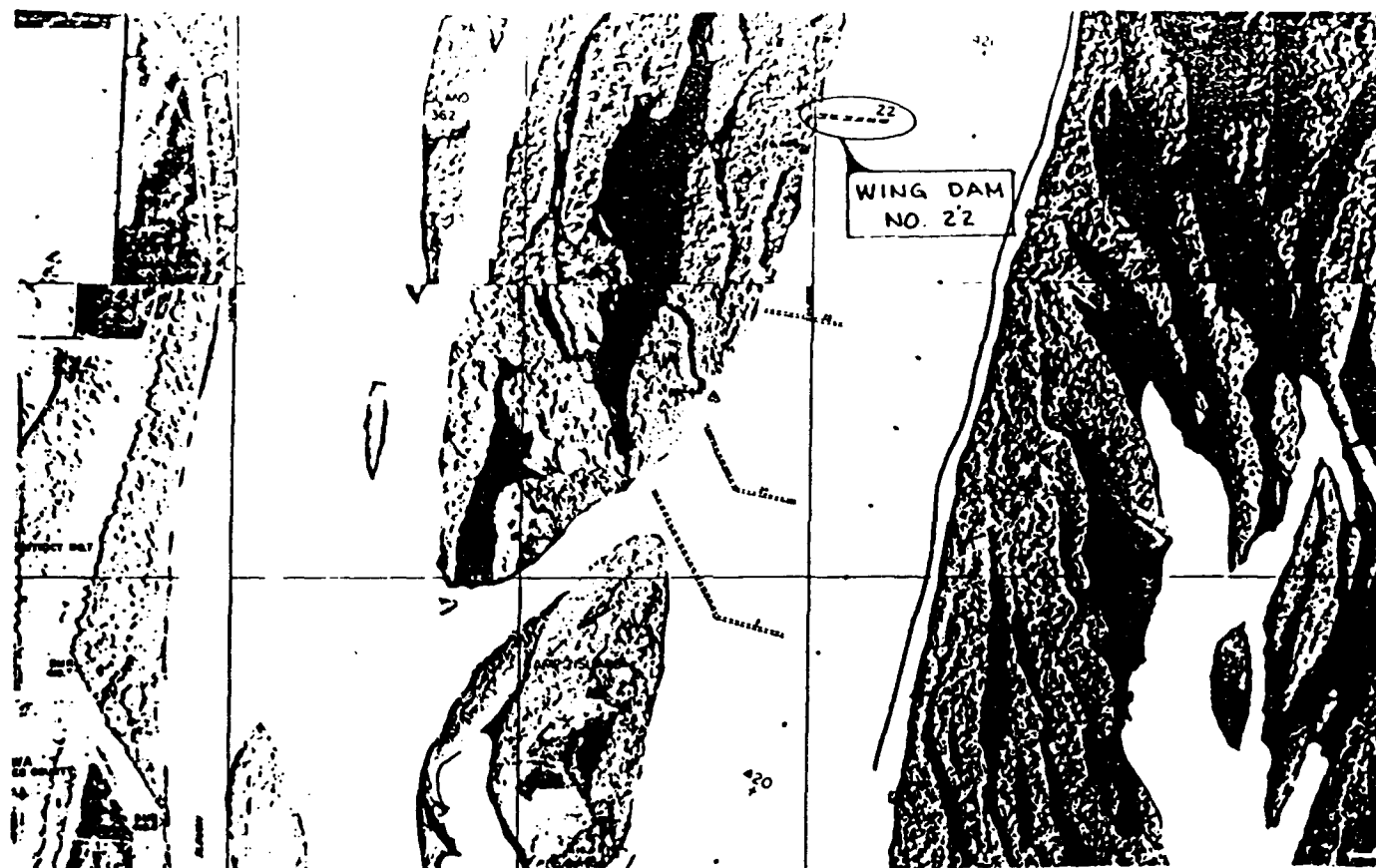
PROFILE

WING DAM NO. 24

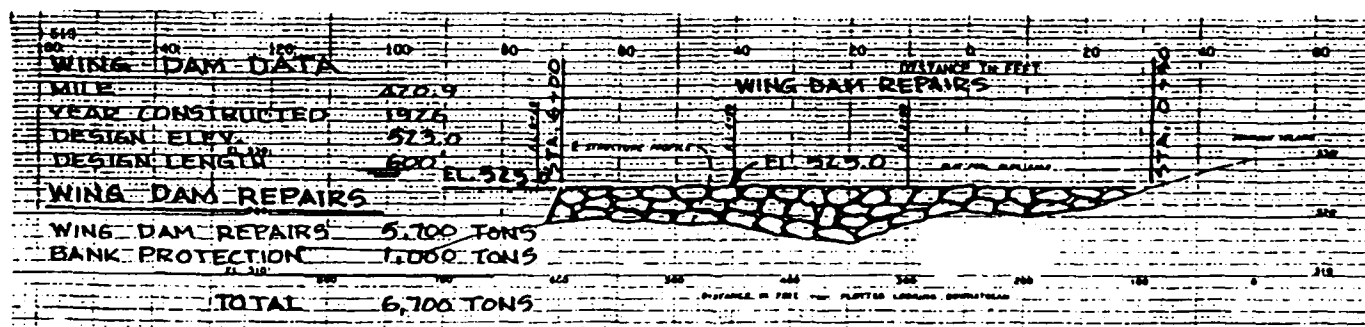
MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 24
MILE 420.4

PLANPROFILE
WING DAM NO. 23

MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 23
MILE 420.6



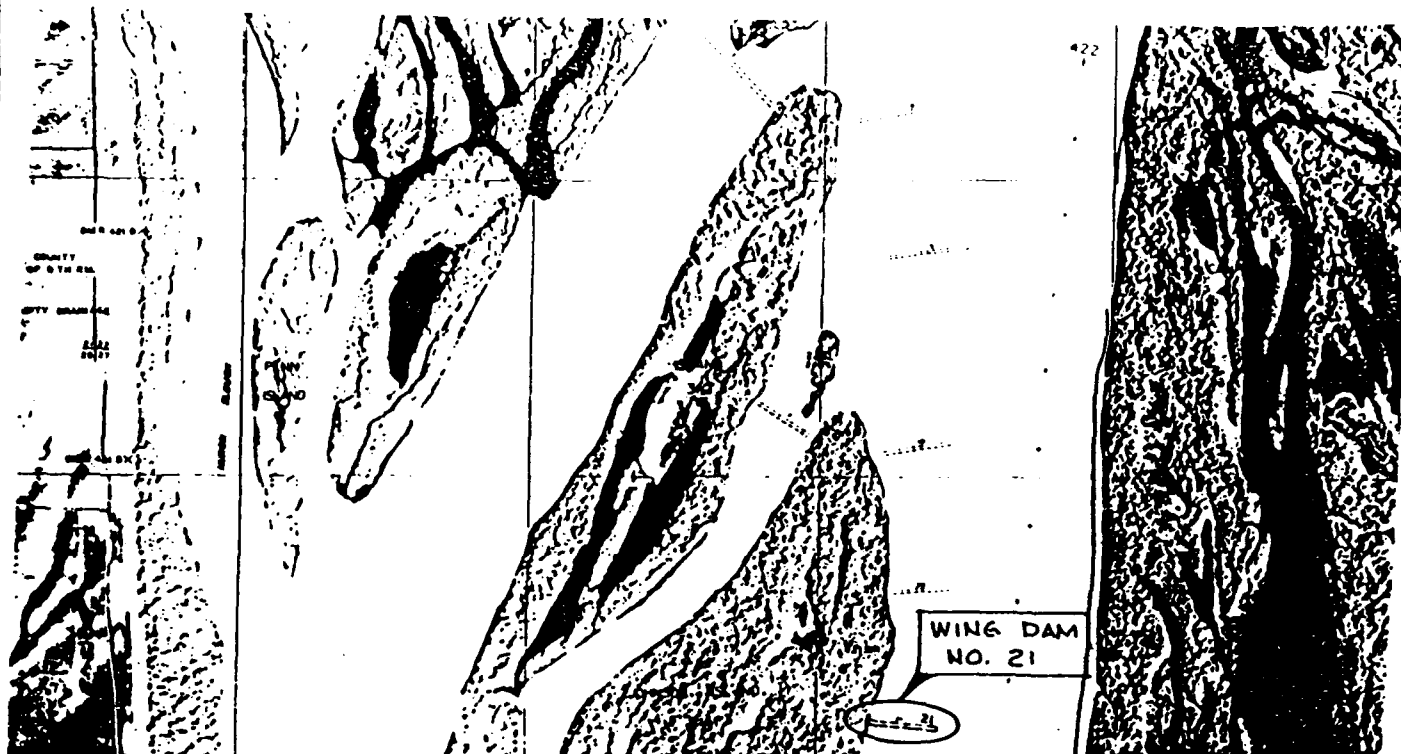
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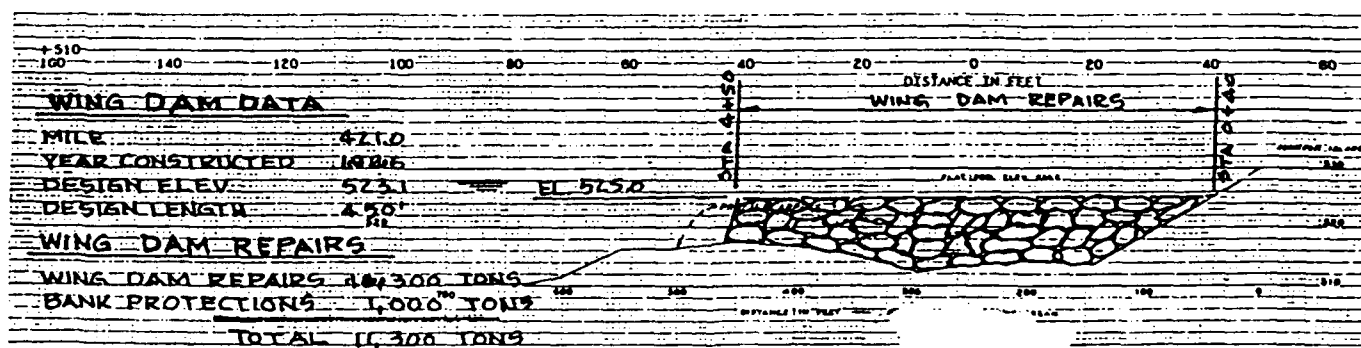
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WING DAM NO. 22

MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 22
MILE 420.9



PLAN



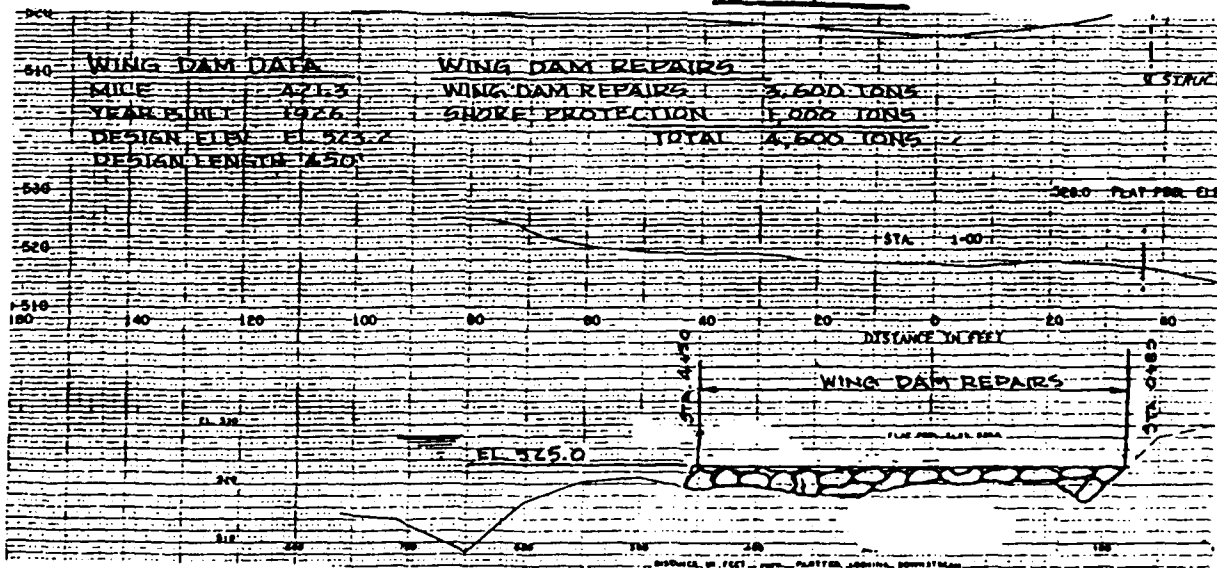
PROFILE

WING DAM NO. 21

MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 21
MILE 421.0

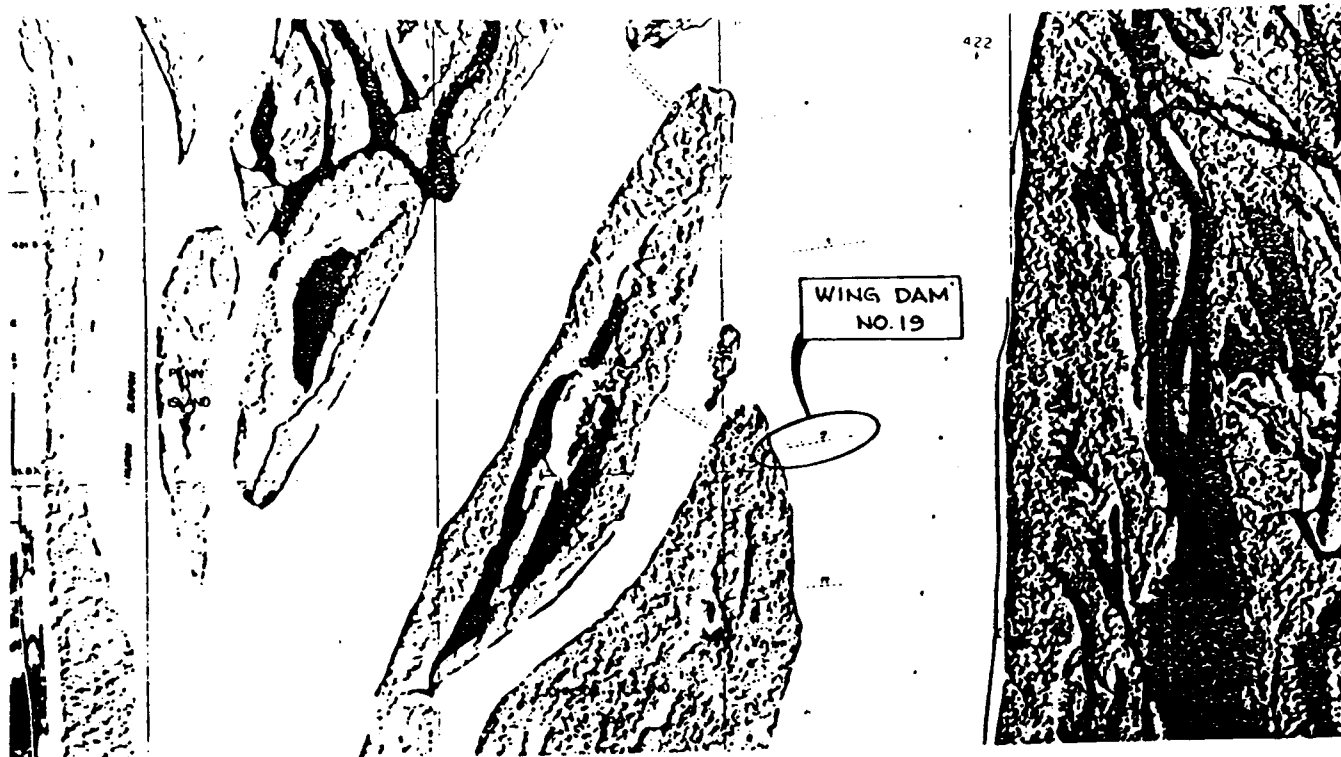


PLAN



PROFILE WING DAM NO. 20

MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 20
MILE 421.3



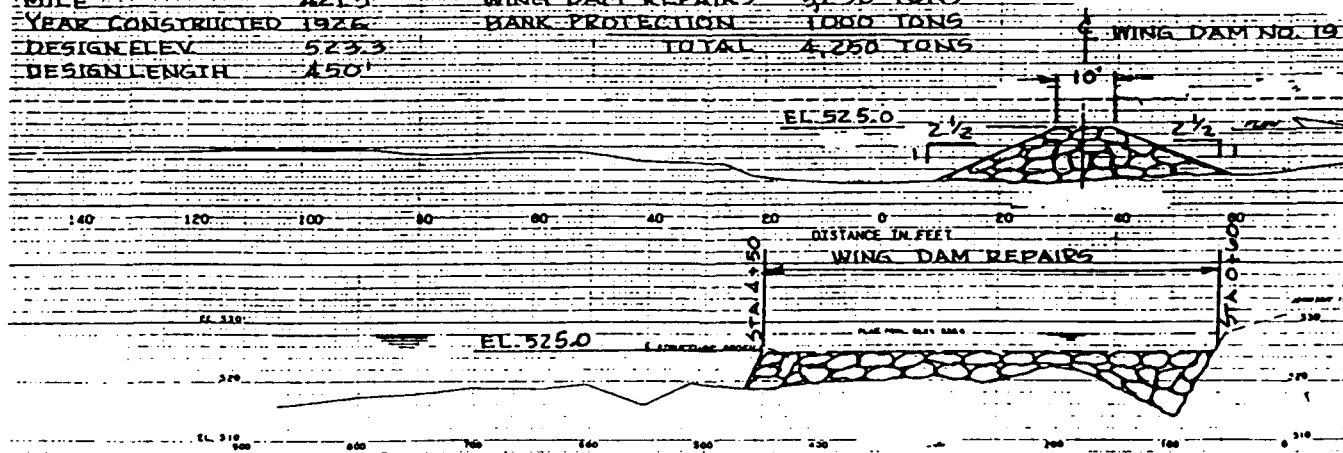
PLAN

WING DAM DATA

MILE 421.5
 YEAR CONSTRUCTED 1926
 DESIGN ELEV 523.3
 DESIGN LENGTH 150'

WING DAM REPAIRS

WING DAM REPAIRS 3250 TONS
 BANK PROTECTION 1000 TONS
 TOTAL 4,250 TONS



PROFILE

WING DAM NO. 19

MISSISSIPPI RIVER
 POOL 18
 WING DAM REPAIRS
 WING DAM NO. 19
 MILE 421.5

PERTINENT CORRESPONDENCE

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD

CHICAGO, IL 60604-3590

APR 09 1992

REPLY TO THE ATTENTION OF:

5ME-19J

Dudley M. Hanson, P.E.
Chief, Planning Division
Department of the Army
Rock Island District, Corps of Engineers
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204

Dear Mr. Hanson:

We have reviewed your agency's scoping letter regarding the proposed plans to raise the height of seven wing dams between river miles 420.2 and 421.6 on the Mississippi River. The wing dams are proposed to be raised approximately 2.0 to 2.5 feet to bring their elevation to 525 feet. The project is necessary for routine maintenance and to reduce the demand for maintenance dredging in the navigation channel. We offer the following comments.

The scoping letter indicates that approximately 48,000 tons of stone will be required for the wing dam repairs. Commercial sources should be used to purchase this material to ensure that wetlands or other unique area habitats are not impacted when obtaining the materials.

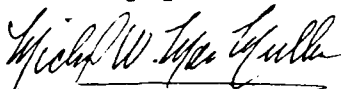
Describe the types of turbidity-control measures that will be implemented to minimize adverse impacts to the aquatic environment. Such measures may include the use of silt screens or partial coffer dams. Also, indicate in the NEPA documentation whether the sediment in the project area has been characterized, as contaminants have the potential to be resuspended.

Indicate in the NEPA documentation what erosion control measures are proposed to be taken during construction activities. Such measures may include limiting the number of access points to the project area, establishing a staging area for the construction equipment and materials in an environmentally non-sensitive area, and revegetating all disturbed areas with native flora upon completion of project activities. The use of erosion control measures should be required in the project contract that is put out for bid. Also, indicate what measures will be implemented to prevent the introduction of soil and petroleum products into the river.

Finally, project work should be scheduled so that breeding and migration seasons for fish and wildlife are avoided.

Thank you for the opportunity to provide scoping comments on the proposed elevation of wing dams on the Mississippi River. If you have any questions on our comments, please contact Holly Wirick of my staff at (312/FTS) 353-6704.

Sincerely yours,



for William D. Franz, Acting Chief
Planning and Assessment Branch
Planning and Management Division



State Historical Society of Iowa

The Historical Division of the Department of Cultural Affairs

May 8, 1992

In reply refer to:
R&C#: 920429037

Dudley M. Hanson, P. E.
Chief, Planning Division
Rock Island District Corps of Engineers
Clock Tower Building
P. O. Box 2004
Rock Island, IL 61204-2004

RE: COE - DES MOINES COUNTY - MISSISSIPPI RIVER POOL 18 WING DAM
REPAIRS RIVER MILES 420.3 - 421.6

Dear Mr. Hanson:

Based on the information you provided, we find that there are no historic properties which might be affected by the proposed undertaking. Therefore, we recommend project approval.

However, if the proposed project work uncovers an item or items which might be of archeological, historical or architectural interest, or if important data come to light in the project area, you should make reasonable efforts to avoid or minimize harm to the property until the significance of the discovery can be determined.

Should you have any questions or if the office can be of further assistance to you, please contact the Review & Compliance program at 515-281-8743.

Sincerely,

Laurine Rogers
Archeologist, Review and Compliance Program
Historic Preservation Bureau

/bf

cc: Mr. James Blancher


| | | | |
|---|-----------------------------|------------------------------|-------------------|
| CONVERSATION RECORD | | TIME
0830 | DATE
12 May 92 |
| TYPE () VISIT () CONFERENCE (x) TELEPHONE | | CF: ----- | |
| | | () INCOMING
(x) OUTGOING | |
| NAME CONTACTED
Robert Clevensline | ORGANIZATION
USFWS, RIFO | TELEPHONE
309/793-5800 | |

SUBJECT: Johnson Island Wing Dam Repairs RM 420.2 - 421.6,
Mississippi River

SUMMARY:

1. Because the 30-day comment period for the Corps' March 10, 1992 coordination letter has expired, I contacted Mr. Clevensline for any FWS input on this project.
2. Mr. Clevensline said no comments were forthcoming and, in fact, concurred with the Corps opinion that this project will have minimal and short term impacts.
3. Mr. Clevensline stated that the project will not impact any endangered or threatened species.

ACTION REQUIRED:

| | | |
|--|---|-------------------|
| NAME OF PERSON
DOCUMENTING CONVERSATION
Joseph W. Jordan | SIGNATURE
 | DATE
12 May 92 |
|--|---|-------------------|

=====

ACTION TAKEN

| | | |
|-----------|---------------------|---------|
| SIGNATURE | TITLE | DATE |
| 50271-101 | CONVERSATION RECORD | (12-76) |



TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

May 12, 1992

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division, Mr. Joseph Jordan
Clock Tower Building
P. O. Box 2004
Rock Island, Illinois 61204-2004

COPY

SUBJECT: Proposed construction to raise the height of seven wingdams
on the Mississippi River between R.M. 420.2 and 421.6.

Dear Mr. Jordan:

The Iowa Department of Natural Resources as reviewed the proposed repair work on seven wingdams to be raised approximately 2.0 to 2.5 feet, which is located between river mile 420.2 and 421.6 on the Mississippi River. This raise in will bring their elevation to 525.0 feet, which will be 3 feet below flat pool elevation.

No significant impacts should result from this proposed construction, likewise, this agency has no objections to the project and concurs with the planning report.

Thank you for the opportunity to review and comment on the proposed construction work.

Sincerely,

Larry J. Wilson, Director
Iowa Department of Natural Resources

LJW:dlh

| | | |
|--|-------|--------------|
| Post-It™ brand fax transmittal memo 7671 | | # of pages 1 |
| To Joe Jordan | From | Dwight Hays |
| Ca Rock Is Corps of Eng | Ca | Ia DNR |
| Dept. Planning Div. | Phone | 515-281-875 |
| Fax 509-788-6361 ext 6710 | Fax | 515-281-6294 |

WALLACE STATE OFFICE BUILDING / DES MOINES, IOWA 50319 / 515-281-5145 / TDD 515-242-5967

SECTION 404(b)(1) EVALUATION

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REPLY TO
ATTENTION OF

CENCR-PD-E

DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P.O. BOX 2004
ROCK ISLAND, ILLINOIS 61204-2004

CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION
WING DAM IMPROVEMENTS AT JOHNSON ISLAND
POOL 18, MISSISSIPPI RIVER
DES MOINES COUNTY, IOWA

JULY 1992

WING DAM IMPROVEMENTS AT JOHNSON ISLAND

POOL 18, MISSISSIPPI RIVER
DES MOINES COUNTY, IOWA

APPENDIX B
CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION

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WING DAM IMPROVEMENTS AT JOHNSON ISLAND

POOL 18, MISSISSIPPI RIVER
DES MOINES COUNTY, IOWA

APPENDIX B
CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION

SECTION 1 - PROJECT DESCRIPTION

LOCATION

This document specifically addresses rock placement at seven sites, all of which are in Pool 18, RM 420.2 - 421.6, Mississippi River, Des Moines County, Iowa. All of the structures are existing wing dams (plate 1).

GENERAL DESCRIPTION

The proposed work addressed in this document involves improving seven wing dams from RM 420.2 to 421.6. Each proposed action is described as follows:

A. Wing Dam No. 2. This structure is located at RM 420.3 (plate 2). Original elevation is 522.7. It will be raised to 525.0, approximately 3 feet below flat pool. The length of the wing dam will be brought back to original design of 1,400 feet. Wing Dam No. 2 will have a total of 200 feet of bankline protection added upstream and downstream along the bank.

B. Wing Dam No. 24. This structure is located at RM 420.4 (plate 3). Its elevation is to be raised from 522.7 to 525.0, approximately 3 feet below flat pool. Its length will remain at 950 feet. A total of 200 feet of bankline protection will be placed.

C. Wing Dam No. 23. This structure is located at RM 420.6 (plate 4). Its elevation is to be raised from 522.8 to 525.0, approximately 3 feet below flat pool. Its length will remain at 600 feet. A total of 200 feet of bankline protection will be placed.

D. Wing Dam No. 22. This structure is located at RM 420.9 (plate 5). Its elevation is to be raised from 523.0 to 525.0, approximately 3 feet below flat pool. Its length will remain at 600 feet. A total of 200 feet of bankline protection will be placed.

E. Wing Dam No. 21. This structure is located at RM 421.5 (plate 6). Its elevation is to be raised from 523.1 to 525.0, approximately 3 feet below flat pool. Its length will remain at 450 feet. A total of 200 feet of bankline protection will be placed.

F. Wing Dam No. 20. This structure is located at RM 421.3 (plate 7). Its elevation is to be raised from 523.2 to 525.0, approximately 3 feet below flat pool. Its length will remain at 450 feet. A total of 200 feet of bankline protection will be placed.

G. Wing Dam No. 19. This structure is located at RM 421.5 (plate 6). Its elevation is to be raised from 523.3 to 525.0, approximately 3 feet below flat pool. Its length will remain at 450 feet. A total of 200 feet of bankline protection will be placed.

AUTHORITY AND PURPOSE

Authority for the proposed improvements is given in Section 1 of Public Law 520, 71st Congress, H.R. 11781, and Section 1 of Public Law 409, 74th Congress, H.R. 6732 (the Rivers and Harbors Acts of July 3, 1950, and August 30, 1935, respectively).

GENERAL DESCRIPTION OF DREDGED AND FILL MATERIAL

Fill material will consist of approximately 48 tons of inert and uncontaminated limestone/dolomite rock obtained from an approved source. Rock of up to the 400-pound size will be used for all structures. This action is anticipated to be in the summer of 1992, after the first phase of a 3-year fishery survey is completed and analyzed for the presence of any endangered species. If any endangered species are found, the construction of the new closing dam will not take place.

DESCRIPTION OF PROPOSED DISCHARGE SITES

Plates 2-8 show locations of the new and existing construction. The proposed discharge sites are inside channel habitat of the Mississippi River. The sites are open water, unconfined and along the bankline. Timing and duration of the discharge at Wing Dams Nos. 2 and 19-22 will be repaired later this summer and early fall. This work is expected to last 2 to 3 weeks.

DESCRIPTION OF PLACEMENT METHOD

Placement of rock material for the wing dam repair typically involves the use of deck-mounted cranes and/or derricks, deck barges, embroiders, quarter boats, and tender craft. Materials are dumped to alignment and spread to profile. Large-grade stone is placed by crane or derrick.

SECTION 2 - FACTUAL DETERMINATIONS

PHYSICAL SUBSTRATE DETERMINATIONS

The elevation and slope of all discharge sites will change. The actual increase varies across the river bottom cross section, depending on depth. The existing bottom elevations also vary according to movement of the river's bedload. Substrate may accrete or degrade depending on the river's discharge stage. Although the completed structures will remain at the constructed elevation, adjacent and nearby bottom substrata will likely change. As intended, the structures will probably cause a decrease in bottom elevation in the river thalweg (or main channel) and/or prevent the shoaling (addition) of new sediments which would require dredging. Placing the newly constructed feature and repairing existing structures should eliminate the shoaling which now occurs regularly.

Besides deepening the main channel, submerged wing dams and closing dams tend to cause a deepening of the river bottom immediately downstream of the structure. These "scour holes" are often 30 to 40 feet deep.

The shoreline of Johnson Island is eroding at a very rapid rate. Undercutting of the bank is causing tons of sediment and toppled trees to re-enter the river. Installation of bankline protection along the shore at the juncture of the wing dams will prevent further degradation.

Material placed for construction will be quarried limestone, up to the 400-pound size.

Movement of material off-site will be negligible due to the large-sized rock used for construction.

Material placement should not significantly affect benthic inhabitants. Existing benthos populations in areas of new construction are minimal because of the unstable sand/gravel substrate. The newly deposited rock will provide a stable, permanent substrate that will increase benthos populations.

Actions taken to minimize adverse effects are as follows:

Minimum vegetation impacts are anticipated by the proposed action. Faunal impacts will be limited to short-term disruption of the aquatic community. Since the proposed action will provide similar aquatic habitat to the existing habitat, no methods to minimize impacts have been identified.

Because bald eagle (*Haliaeetus leucocephalus*) use of the area is limited to the winter months, restricting construction to late summer and/or early fall minimizes any disturbance to winter resident and migrating eagles.

WATER CIRCULATION, FLUCTUATION, AND SALINITY DETERMINATIONS

WATER

No pollutant analysis was performed on sandy material at the project site. Typically, analysis of sand sediments, such as found immediately in the project area, reveals little evidence of pollutants due to the limited surface area of sand-size particles and the lack of strong chemical bonding of contaminants to sand grains.

Any contaminants in sandy materials removed from the main channel and placed in the side channel would be those typically contained or transported by normal fluvial processes and therefore common constituents of the Mississippi River system. Disturbance of sandy material would therefore not be anticipated to alter water chemistry in the water column.

Clarity and turbidity of the river varies with seasonal flow. Placement sites and methods have been selected to minimize impact to clarity, color, odor, taste, dissolved gas levels, nutrients, and biochemical oxygen demand in the riverine environment. Discharge of rock will stabilize finer substrate materials; terrestrial placement of rock bankline protection will minimize water quality impacts.

Non-riverine originated components such as rock fill, capstone, concrete, and steel which may be placed temporarily or permanently during construction will be physically stable and chemically noncontaminating.

CURRENT PATTERNS AND CIRCULATION

The proposed structures will affect currents and flow. The purpose of constructing the new structures is to direct water into the main channel (thalweg). In the immediate vicinity of the structures, flows will decrease. There would be no noticeable decrease patterns upstream or downstream of the project. Changes in aquatic resources are difficult to predict, but there may be a trend toward a more backwater type environment.

Terrestrial discharge of material should have no effect on hydraulic or hydrologic conditions in the project area.

Current velocity will decrease along Johnson Island. Water velocity over the wing dams will increase because of the increased vertical construction. Main channel velocities also increase in the immediate project vicinity.

Stratification is not applicable.

As described in previous paragraphs, increased flow and resultant scouring will occur in the main channel. These effects tend to become less noticeable as river discharge stages rise. These effects are usually local and will have no impact a mile or so upstream or downstream of the project.

NORMAL WATER LEVEL FLUCTUATIONS

No effects on normal seasonal river stages are anticipated by the proposed actions.

SALINITY GRADIENTS

The proposed actions take place in and around a fresh water stream system. Therefore, no consideration of salinity gradients is warranted for these actions.

ACTIONS TAKEN TO MINIMIZE IMPACTS

The use of chemically stable materials and physical stabilization of materials by design are actions intended to reduce impacts to the riverine system.

All structures will be below flat pool elevation. This will decrease hazards to boaters and prevent formation of fast land on or below the structures.

SUSPENDED PARTICULATE/TURBIDITY DETERMINATIONS

Rock placement along the shore of Johnson Island will decrease the suspended particulates now originating from the ongoing shoreline erosion. All other completed structures will have negligible effects on turbidity and suspended particulates.

EFFECTS ON CHEMICAL AND PHYSICAL PROPERTIES OF WATER COLUMN

Light Penetration - No effect.

Dissolved Oxygen - No effect.

Toxic Metals and Organics - No effect.

Pathogens - No effect.

Aesthetics - No effect.

Effects on biota, including primary producers, i.e., zoo and phytoplankton, suspension/filter feeders, and sight feeders are anticipated to be short-term. Invertebrate populations of mayflies, caddisflies, stoneflies, and other aquatic insects will increase significantly on the rock substrate provided.

Impacts are anticipated to be minimized by placement site selection dredging methodology and the use of chemically noncontaminating and physically stable materials for project construction.

CONTAMINANT DETERMINATIONS

Rock fill material will be clean, uncontaminated limestone from an approved source.

AQUATIC ECOSYSTEM AND ORGANISM DETERMINATIONS

Because the likelihood of contamination by pollutants is generally low for projects involving rock placement, impacts to the aquatic ecosystem are anticipated to be negligible.

Effects on plankton are anticipated to be minimal. Effects on benthos will be limited to elimination of those organisms currently inhabiting the immediate placement sites. The placement of rock fill should provide interstitial spaces for invertebrate population production and limited vertebrate spawning potential. The type of benthos present in some areas may change toward species preferring quiet waters, since flows will be diminished.

Effects on nekton will be limited to displacement and temporary disruption of foraging patterns. Because the proposed activities are generally held to low-flow (hence, nonspawning seasons), impacts to spawning species should be negligible. Fish populations will benefit from the riprap, closing dam, and decreased flow in Hurricane Chute. Riprap, through invertebrate colonization, will provide an excellent food source and possible spawning sites. The closing dam also will provide these benefits in addition to forming a deep scour hole downstream of the structure. This scour hole may be used by some fishes for resting, feeding, and overwintering sites in some cases. The more quiet water will favor species such as crappie, bluegill, and bass.

Effects on the aquatic food web are expected to be beneficial overall by increasing production at the lower trophic levels.

Effects on special aquatic sites should be negligible in the project area; no sanctuaries or refuges will be affected by the project action. No wetland or mudflats will be affected by the project actions. No vegetated shallows, coral reefs, or riffle and pool complexes will be affected by the proposed actions.

Threatened and endangered species use of, or existence in, the project area is discussed in the environmental assessment. No impacts or effects to endangered species are anticipated. The U.S. Fish and Wildlife Service concurs with this conclusion.

Other wildlife, such as the river otter, muskrat, and beaver which would move through and around the project area, should only be affected to the extent of travel disruption. No food chain or critical habitat requirements will be affected by the proposed actions.

PROPOSED PLACEMENT SITE DETERMINATIONS

The fill material is inert and will not mix with the water. The lack of fine particulates typically contained in rock fill and main channel sand indicates negligible chemical or turbidity effects resulting from this action.

Due to the nature of the fill material, all discharges are anticipated to be in compliance with State water quality standards.

The proposed project should have no effect on municipal or private water supplies. Recreational or commercial fisheries are expected to benefit from the proposed action. Water-related recreation will not be affected. All of the work has been designed so that each structure remains at least 3 feet below flat pool elevation. Aesthetics are generally negatively affected by this type of construction activity; however, the exposed rock will eventually weather and blend in with the surrounding vegetation and sediment.

DETERMINATION OF CUMULATIVE EFFECTS ON THE AQUATIC ECOSYSTEM

Placement of rock should add diversity to the substrate in this reach of the river. This diversity should provide crevices and interstices in which certain aquatic organisms can feed and reproduce. In terms of habitat diversity, therefore, scour protection will have a net positive effect on the aquatic ecosystem.

No detrimental cumulative impacts are anticipated because of this project.

DETERMINATION OF SECONDARY EFFECTS ON THE AQUATIC ECOSYSTEM

No secondary effects on the aquatic ecosystem are anticipated. Several beneficial secondary effects, as already discussed, are likely to occur. This determination is subject to reevaluation, if warranted by Federal, State, or local agency comment, as well as input from the general public.

SECTION 3 - FINDINGS OF COMPLIANCE WITH
THE RESTRICTIONS ON DISCHARGE

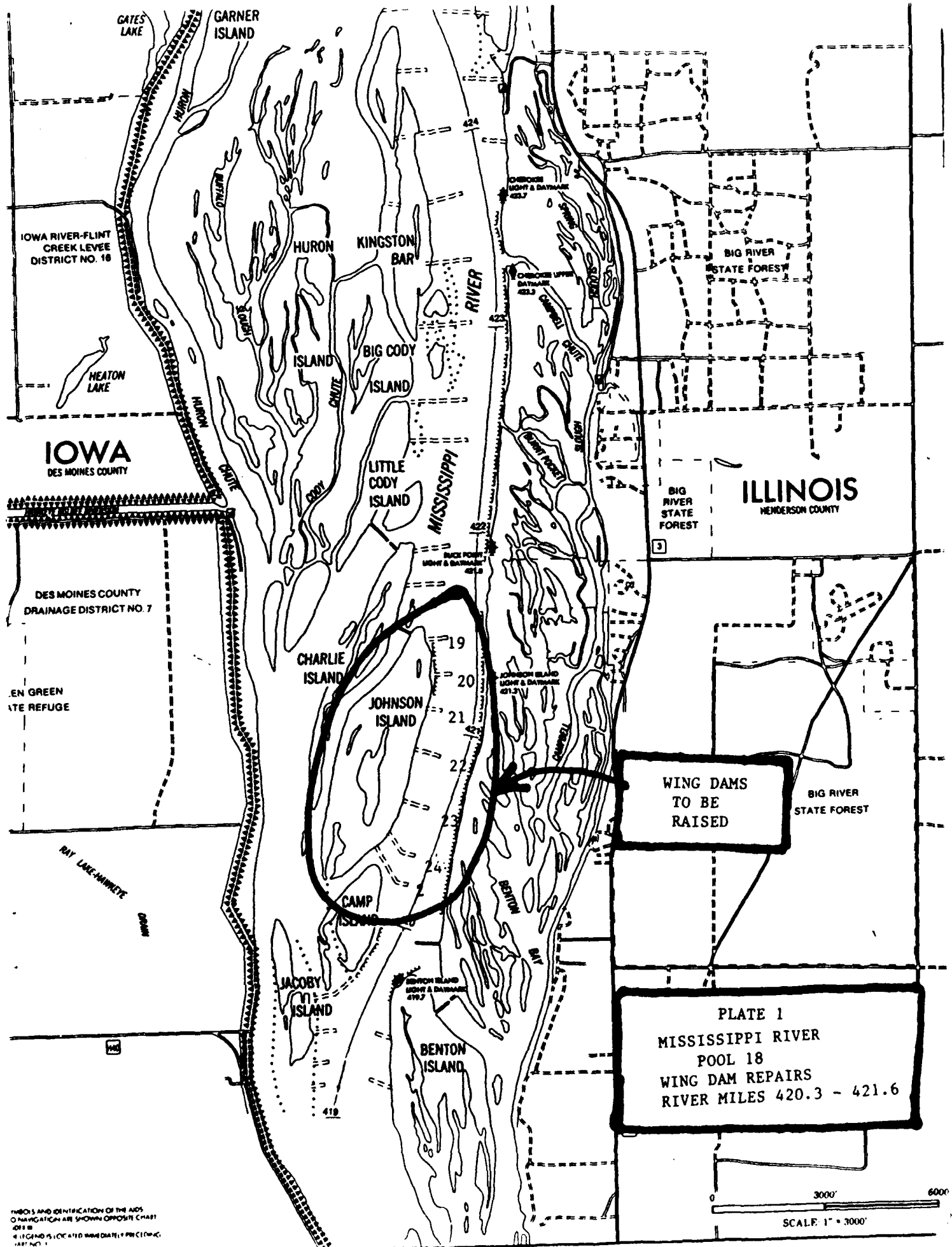
1. No significant adaptations of the 404(b)(1) guidelines were made relative to this evaluation.
2. Evaluation of Practicable Alternatives. Refer to EA Sections III and VII.

No Federal Action. This alternative was not selected because it would result in continued dredging and placement operations which is extremely costly and causes environmental impacts from placement.

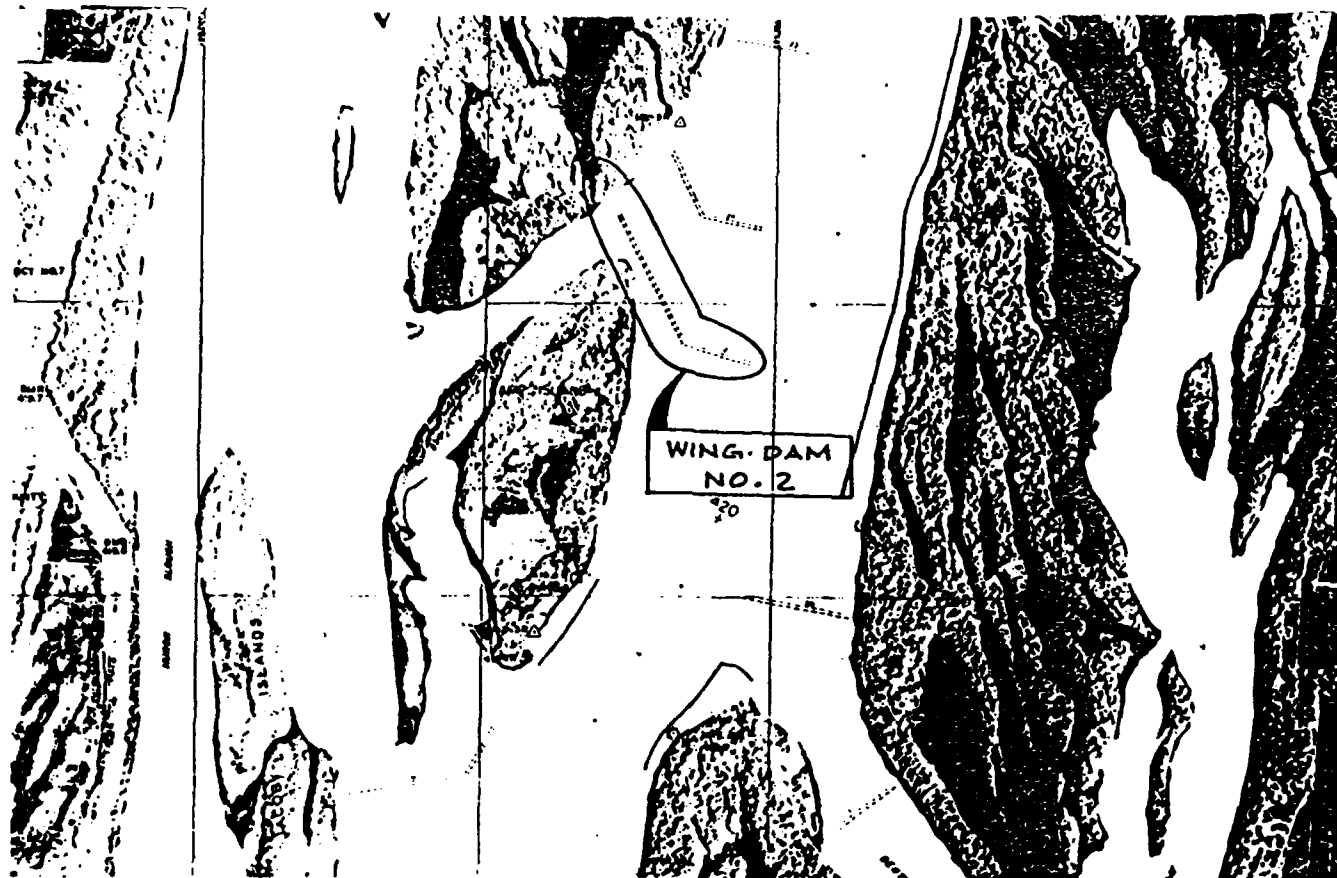
3. Permits, certification, or waiver of certification under Section 404 of the Clean Water Act will be obtained before construction begins. The project will be in compliance with water quality standards of Iowa.
4. The project is not anticipated to introduce significant quantities of toxic substances into nearby waters or result in appreciable increases in existing levels of toxic materials
5. No significant impact to Federal or State-listed endangered species will result from the proposed action.
6. The project is situated along an inland freshwater stream system. No marine sanctuaries are involved or would be affected by the proposed action.
7. No municipal water supplies will be affected by the proposed action, and no degradation of waters of the United States is anticipated to result from the proposed action.
8. The materials used for construction will be chemically and physically stable and noncontaminating.
9. No other practical alternatives have been identified. The proposed action is in compliance with Section 404(b)(1) of the Clean Water Act, as amended. The proposed action will not significantly impact water quality and will improve the integrity of an authorized navigation system.

Date

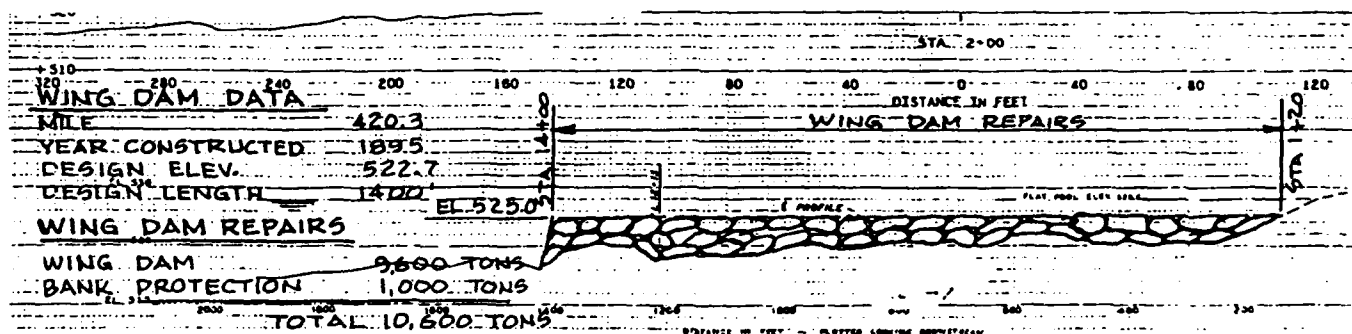
Albert J. Kraus
Colonel, U.S. Army
District Engineer



THE LOCATION AND IDENTIFICATION OF THE AIDS
ON NAVIGATION ARE SHOWN OPPOSITE CHART
OF 18
IF LAND IS LOCATED IMMEDIATELY PRECEDING
CHART NO. 1

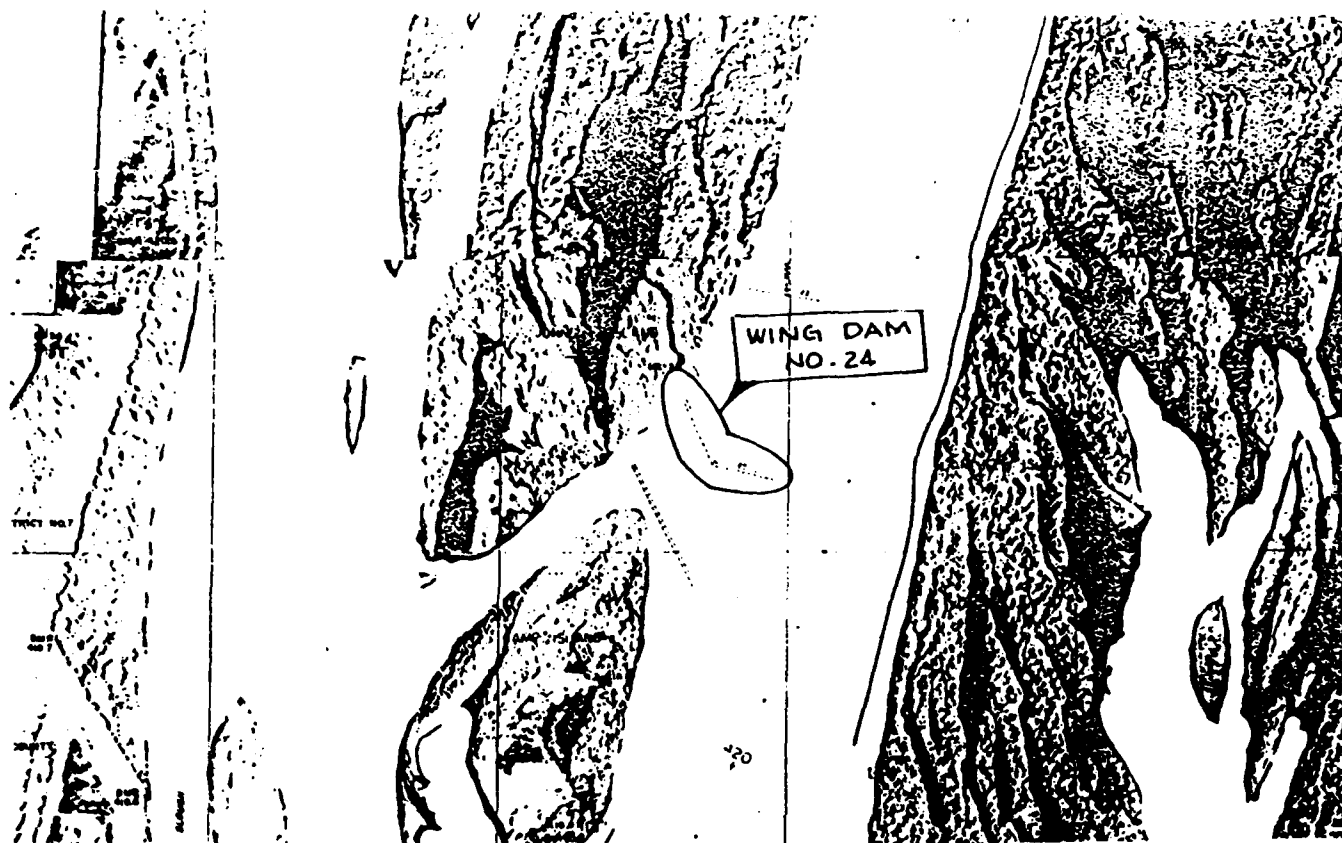


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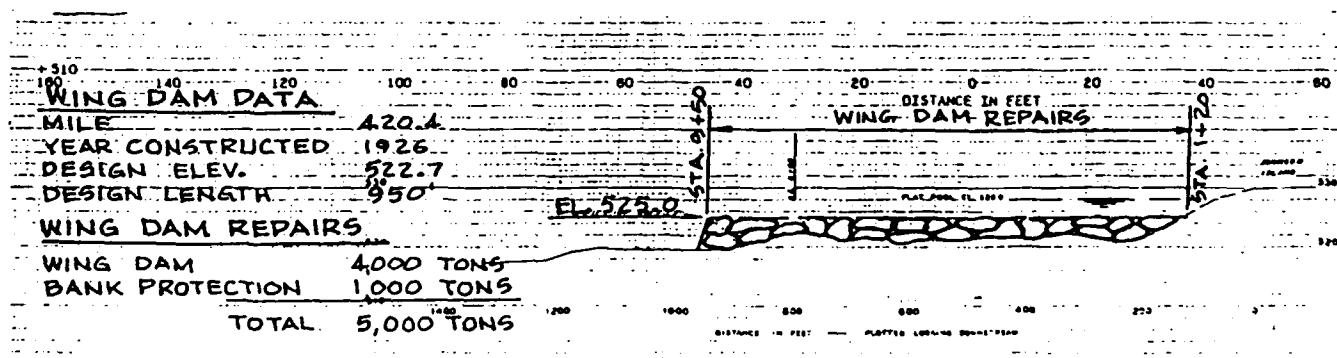


PROFILE WING DAM NO. 2

MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 2
MILE 420.3

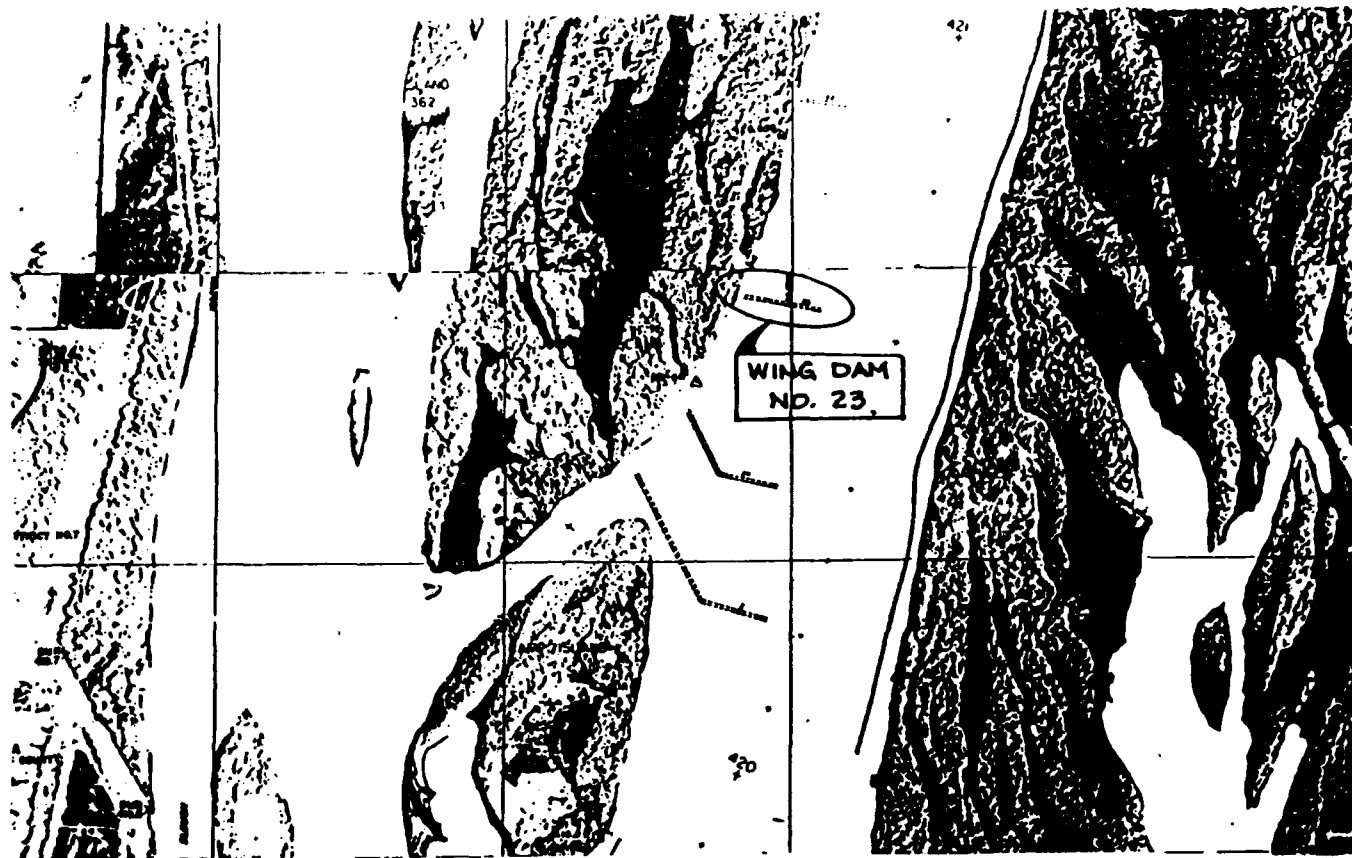
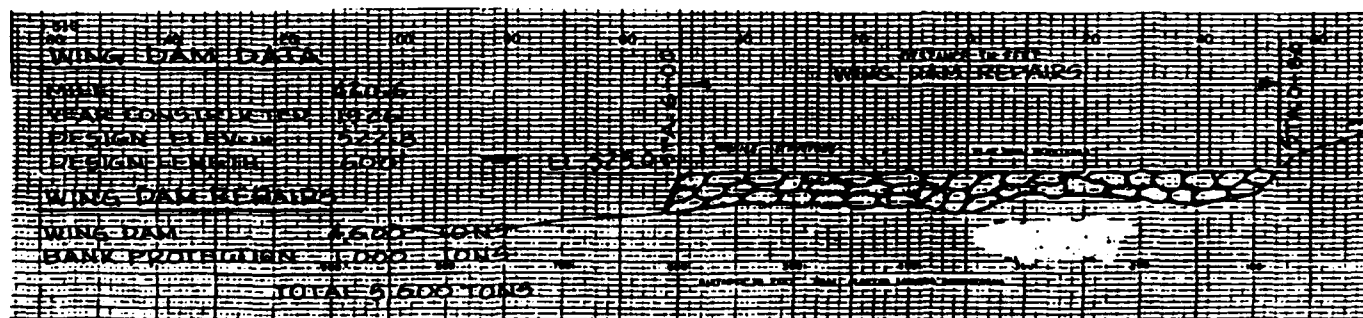


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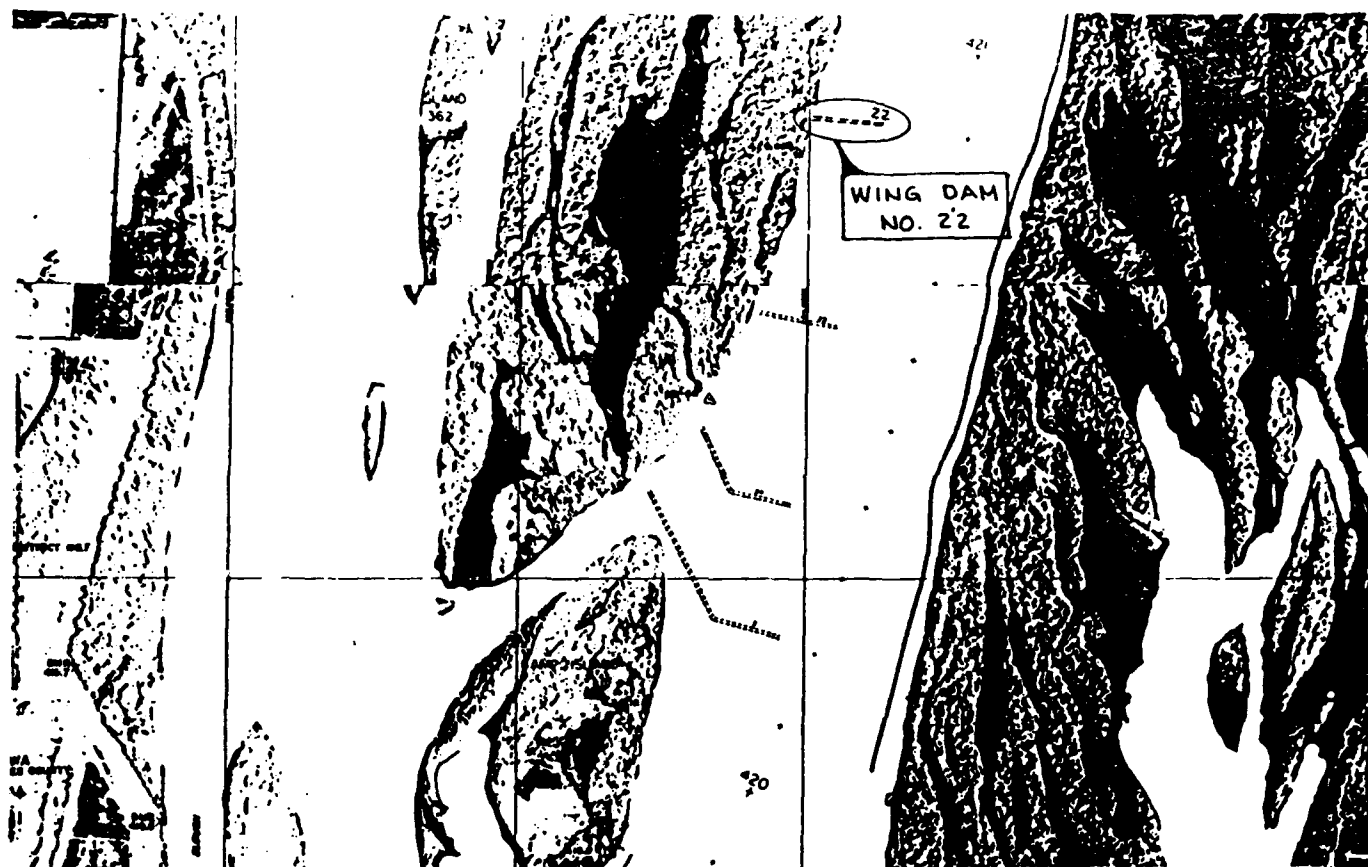


PROFILE WING DAM NO. 24

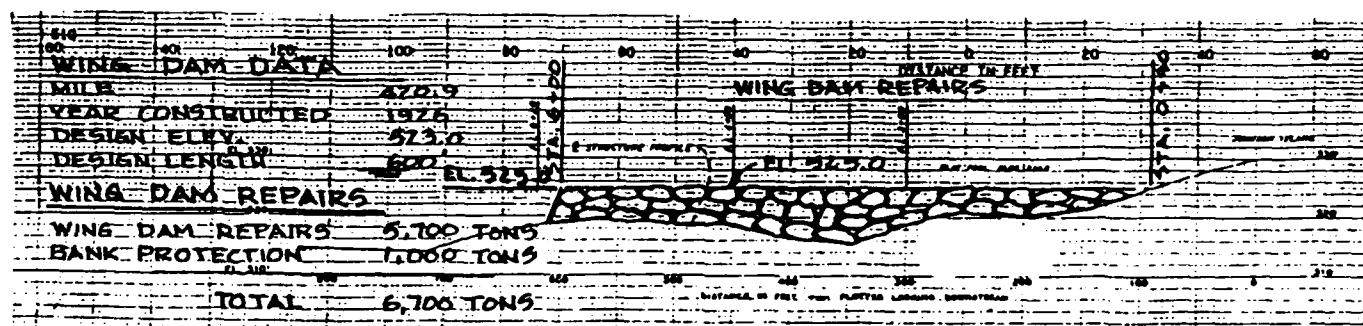
MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 24
MILE 420.4

PLANPROFILE
WING DAM NO. 23

MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 23
MILE 420.6



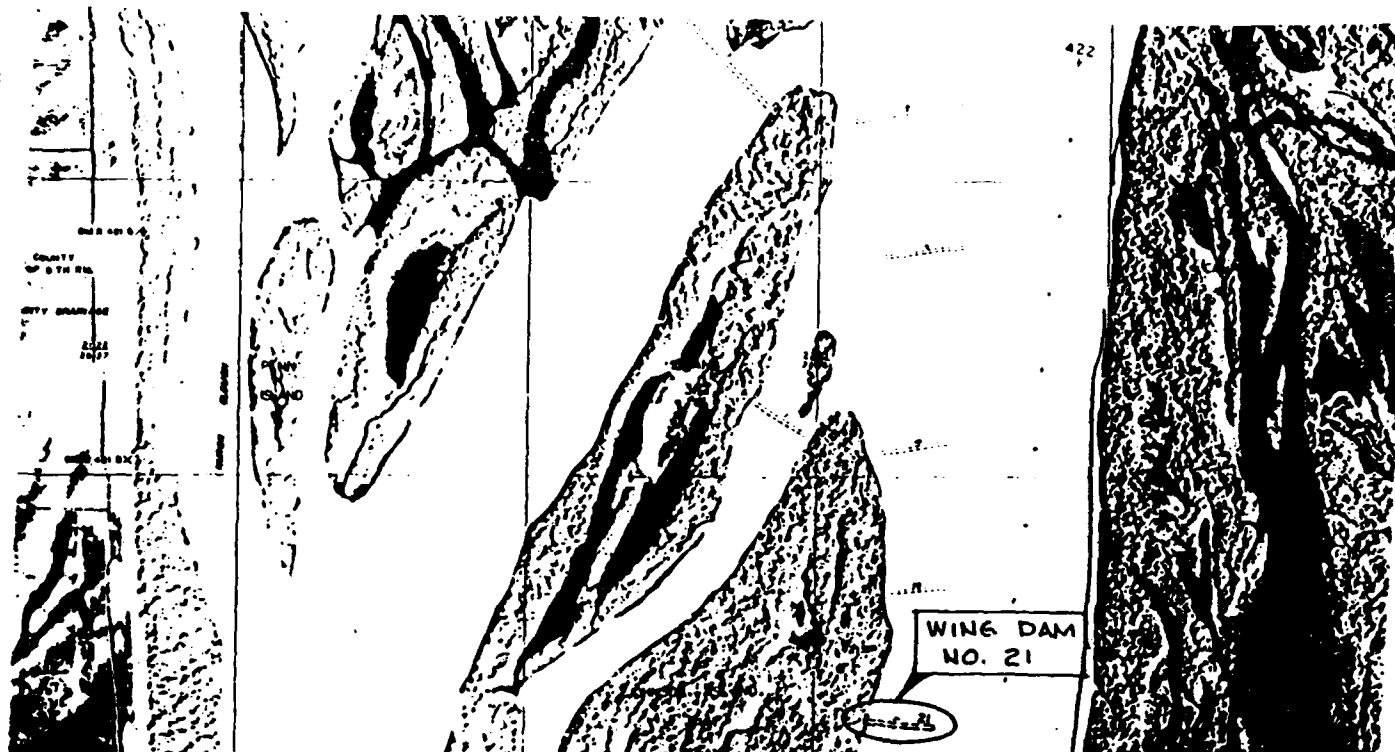
PROFILE



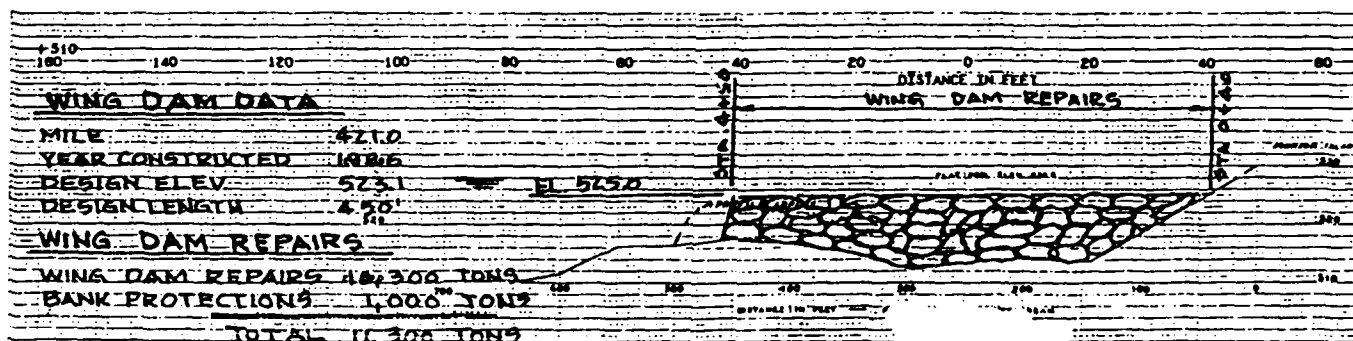
PROFILE

WING DAM NO. 22

MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 22
MILE 420.9



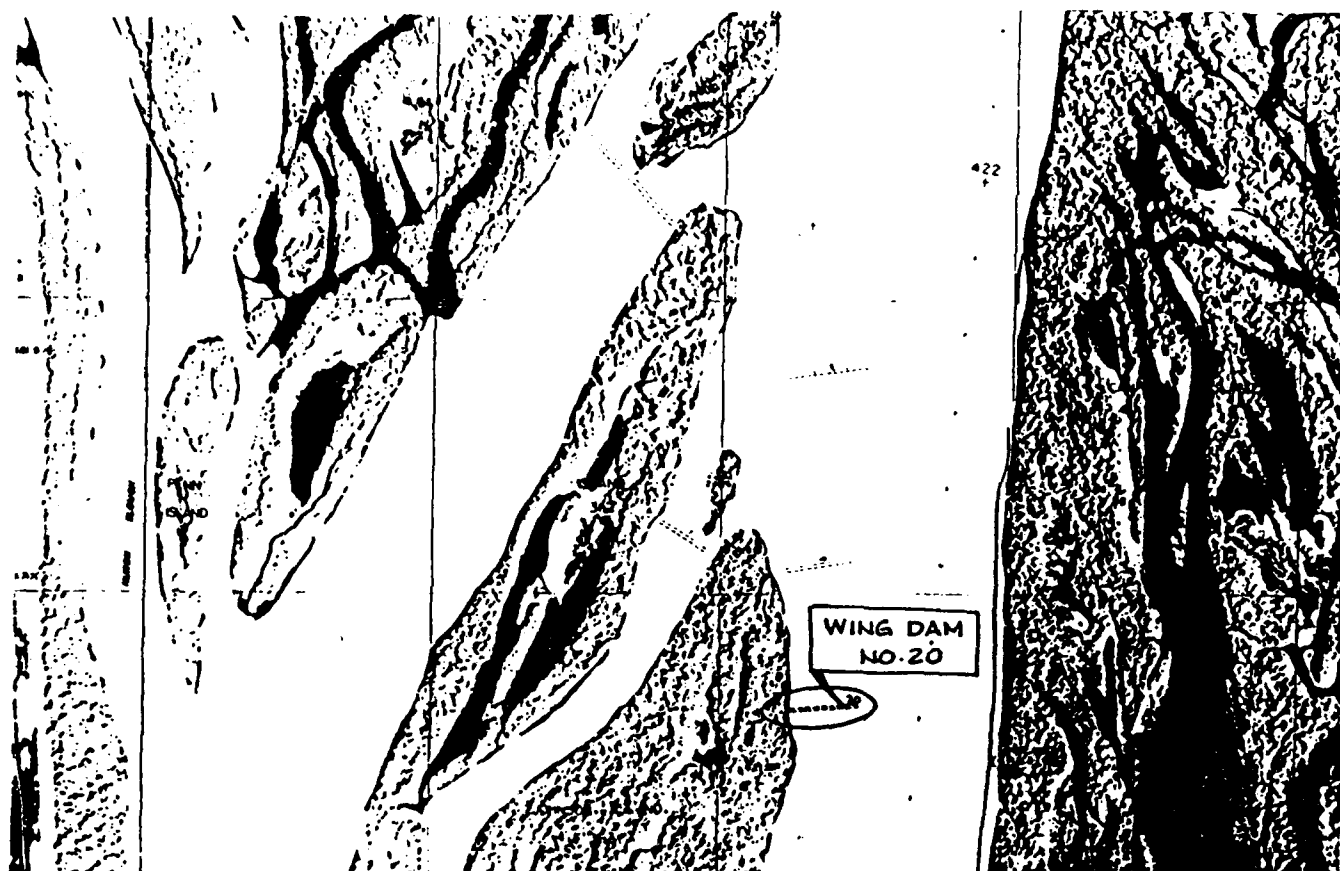
PLAN



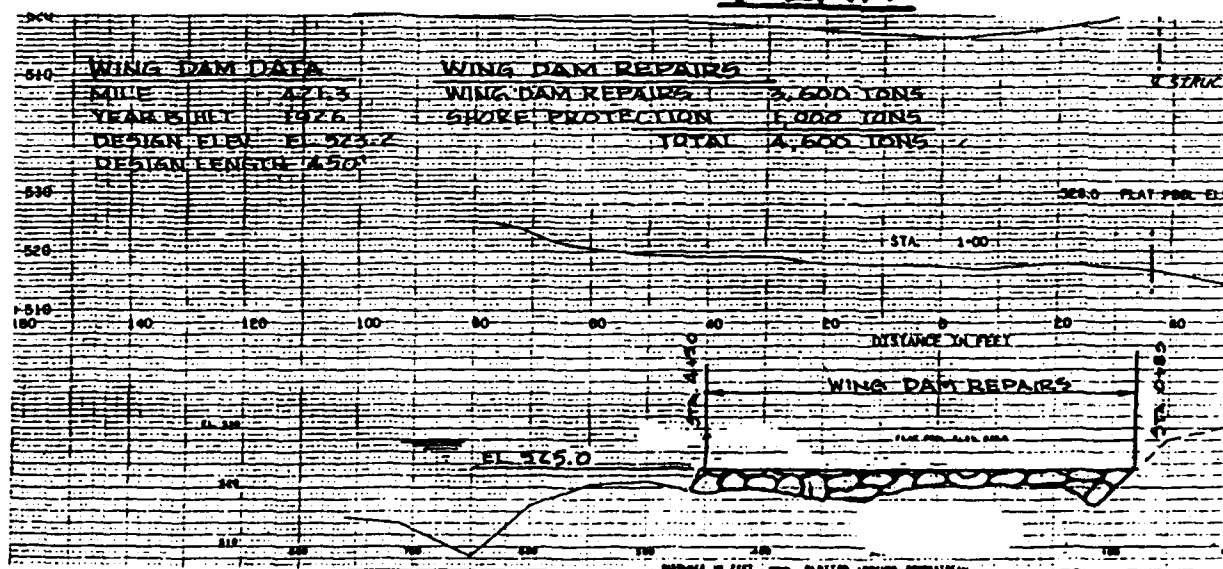
PROFILE

WING DAM NO. 21

MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 21
MILE 421.0

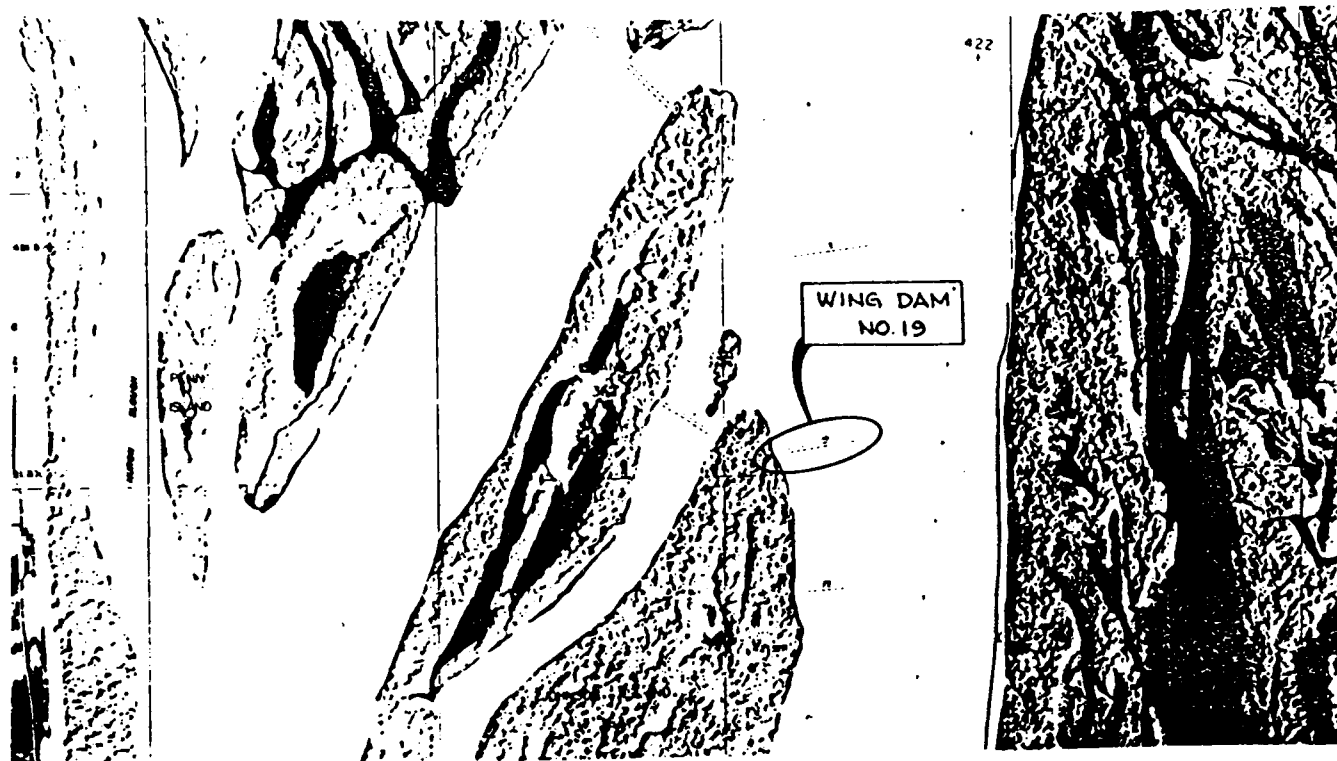


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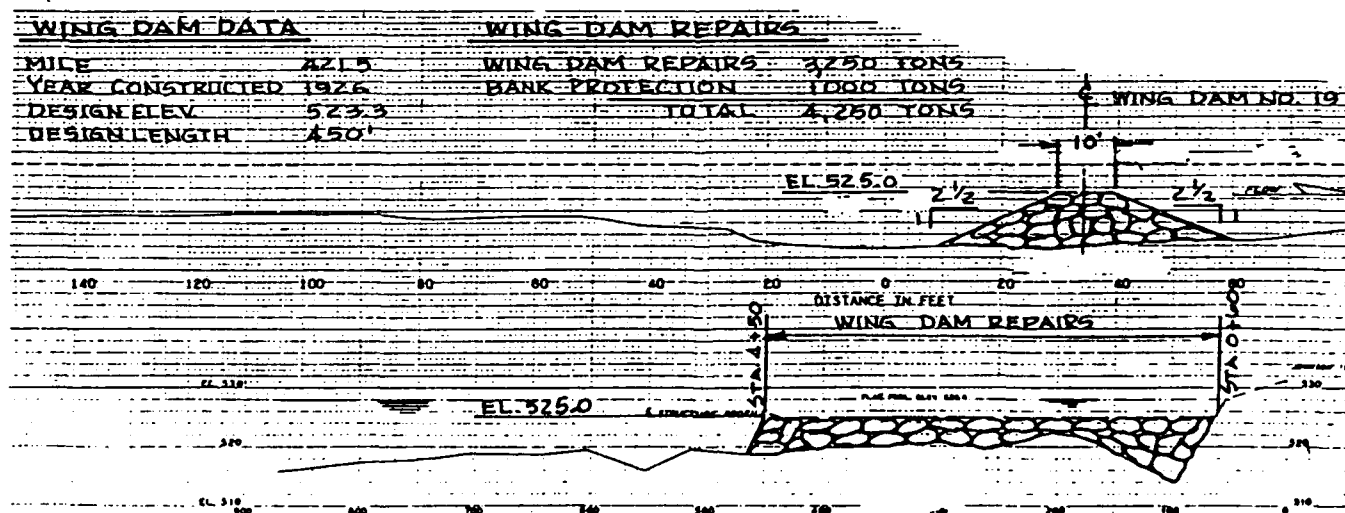


PROFILE WING DAM NO. 20

MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 20
MILE 421.3



PLAN



PROFILE

WING DAM NO. 19

MISSISSIPPI RIVER
POOL 18
WING DAM REPAIRS
WING DAM NO. 19
MILE 421.5

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